

U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Analysis of Cancer Risks near Nuclear Facilities - Phase 1 Study Request

Brian Sheron, Ph.D., Director
Office of Nuclear Regulatory Research
February 24, 2011

Presentation Outline

- NRC – Who We Are and What We Do
- Study Request Background
- Study Expectations and Technical Considerations
- Questions and Answers

The NRC: Who We Are And What We Do



Who We Are

The Energy Reorganization Act of 1974 established the NRC to independently regulate commercial uses of nuclear material, including nuclear power; other duties of the former Atomic Energy Commission were assigned to the DOE.

The NRC is headed by five Commissioners, all nominated by the President and confirmed by the Senate for staggered five year terms. No more than three can be from the same political party.



Who We Are

The Commission as a whole:

- formulates policies and regulations governing nuclear reactor and materials safety;
- issues orders to licensees; and
- adjudicates legal matters brought before it

The President designates one member of the Commission to serve as Chairman and official spokesperson.

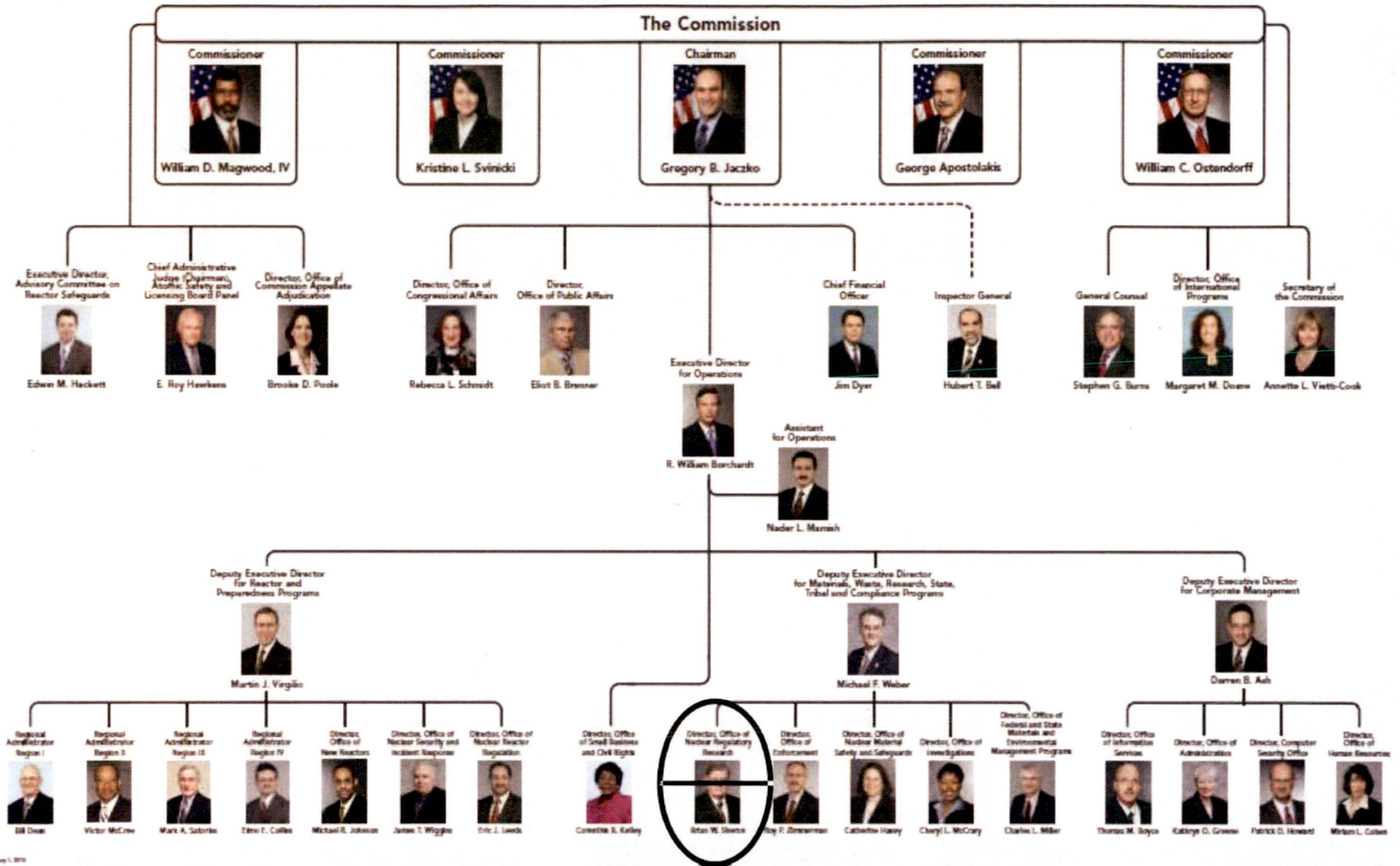
Who We Are

As principal executive officer, the Chairman:

- is responsible for conducting the administrative, organizational, long-range planning, budgetary, and certain personnel functions of the agency.
- is governed by the general policies of the Commission.
- has ultimate authority for all NRC functions pertaining to an emergency involving an NRC license.



U.S. Nuclear Regulatory Commission



February 1, 2010

Office of Nuclear Regulatory Research



Brian Sheron
Director



Jennifer Uhle
Deputy Director

Division of Engineering



Michael Case
Division Director



Stuart Richards
Deputy Division Director

Division of Systems Analysis



Kathy Gibson
Division Director



Michael Scott
Deputy Division Director (A)

Division of Risk Analysis



Christiana Lui
Division Director



Douglas Coe
Deputy Division Director

Program Management, Policy Development & Analysis Staff



Andrea Valentin
PMDA Director



Stephanie Coffin
PMDA Deputy Director



Aladar Csontos
Component Integrity Branch



Mirela Gavrilas
Corrosion and Metallurgy Branch



Tom Boyce
Regulatory Guide Development Branch



Russell Sydnor
Digital Instrumentation and Control Branch



Thomas Koshy
Mechanical and Electrical Engineering Branch



Rosemary Hogan
Structural, Geotechnical and Seismic Engineering



Chns Hoxe
Code Development Branch



Scott Elkins
Reactors Systems Analysis Branch



Michael Scott
New and Advanced Reactors Branch



Stephanie Bush-Goddard
Health Effects Branch



Richard Lee
Fuel and Source Term Branch



Patricia Santiago
Special Projects Branch



Kevin Coyne
Probabilistic Risk Assessment Branch



Mark Salley
Fire Research Branch



Benjamin Beasley
Operating Experience and Generic Issues Branch



Gary DeMoss
Performance and Reliability Branch



Sean Peters
Human Factors and Reliability Branch



William Ott
Environmental Transport Branch



Leslie Donaldson
Human Capital & Communications Branch



Tom Kardaras
Information Technology & Infrastructure Branch



Teresa Grancovitz
Financial & Performance Management Branch



Donna-Marie Sangmino
International Programs Team

Who We Are



The NRC employs nearly 4,000 people among its suburban Maryland headquarters, four regional offices, Technical Training Center, and Yucca Mountain.

NRC inspectors are also assigned to 65 nuclear power plant sites and three fuel facilities.

Our Mission

To license and regulate the nation's civilian use of byproduct, source and special nuclear materials to ensure adequate protection of public health and safety, promote the common defense and security, and protect the environment.

Our Strategic Goals

Safety: Ensure the protection of public health and safety and the environment.

Security: Ensure the secure use and management of radioactive material.

Our Principles & Values

- Principles of good regulation—*independence, openness, efficiency, clarity, and reliability*
- Organizational values—*integrity, service, openness, commitment, cooperation, excellence, and respect*

The NRC Regulates:

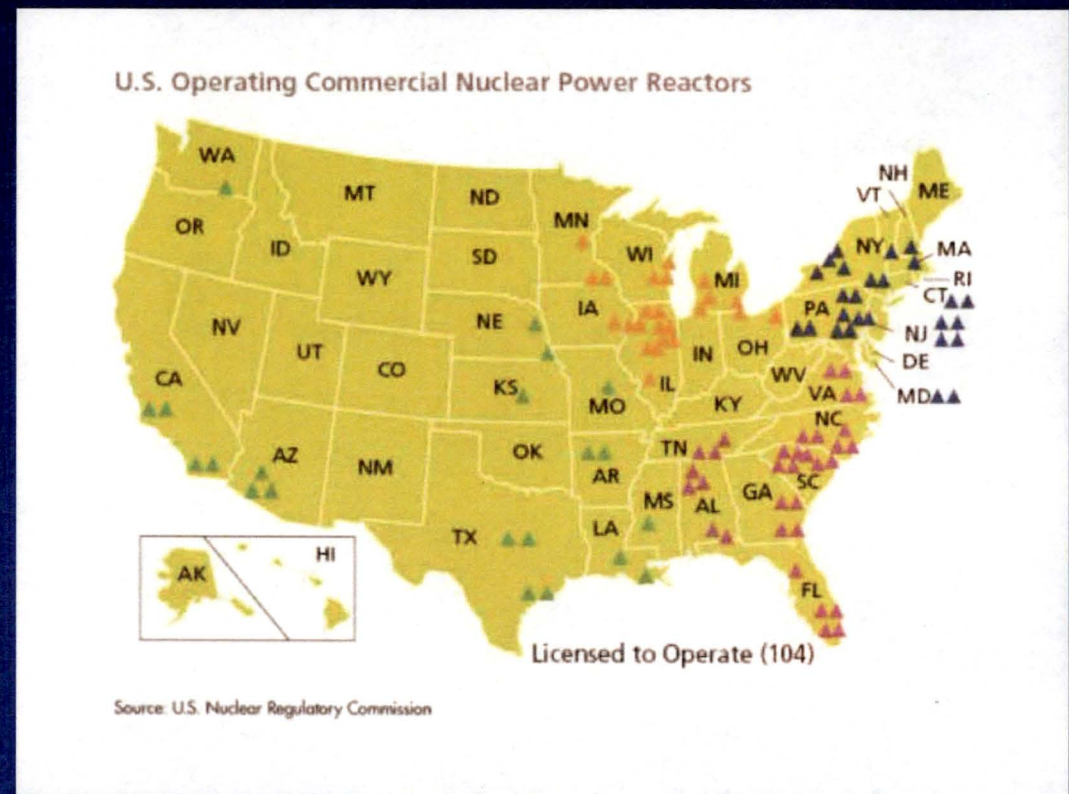
Nuclear reactors – commercial power reactors, research and test reactors, new reactors

Nuclear materials – radioactive materials for medical, industrial and academic use; fuel fabrication facilities

Nuclear waste – transportation, storage and disposal of nuclear material and waste, decommissioning of nuclear facilities; uranium recovery facilities

Some Nuclear Facts

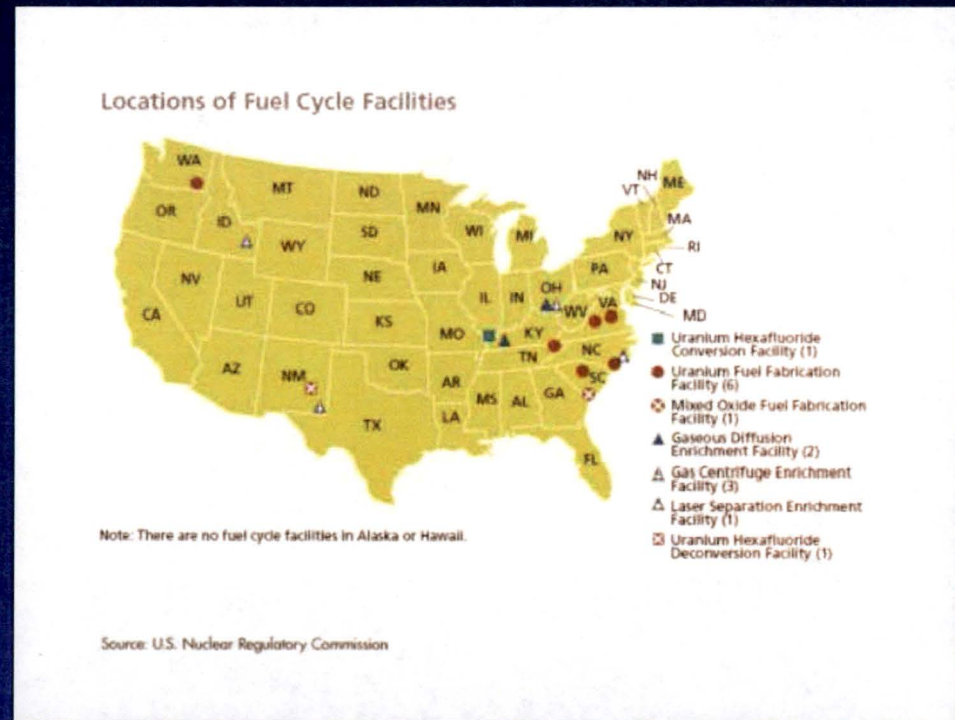
- 104 commercial nuclear power reactors at 65 sites
- Operate in 31 States
- 4 different reactor vendors
- 26 operating companies
- 80 different designs
- Supply ~ 20 percent of the electricity in the U.S.



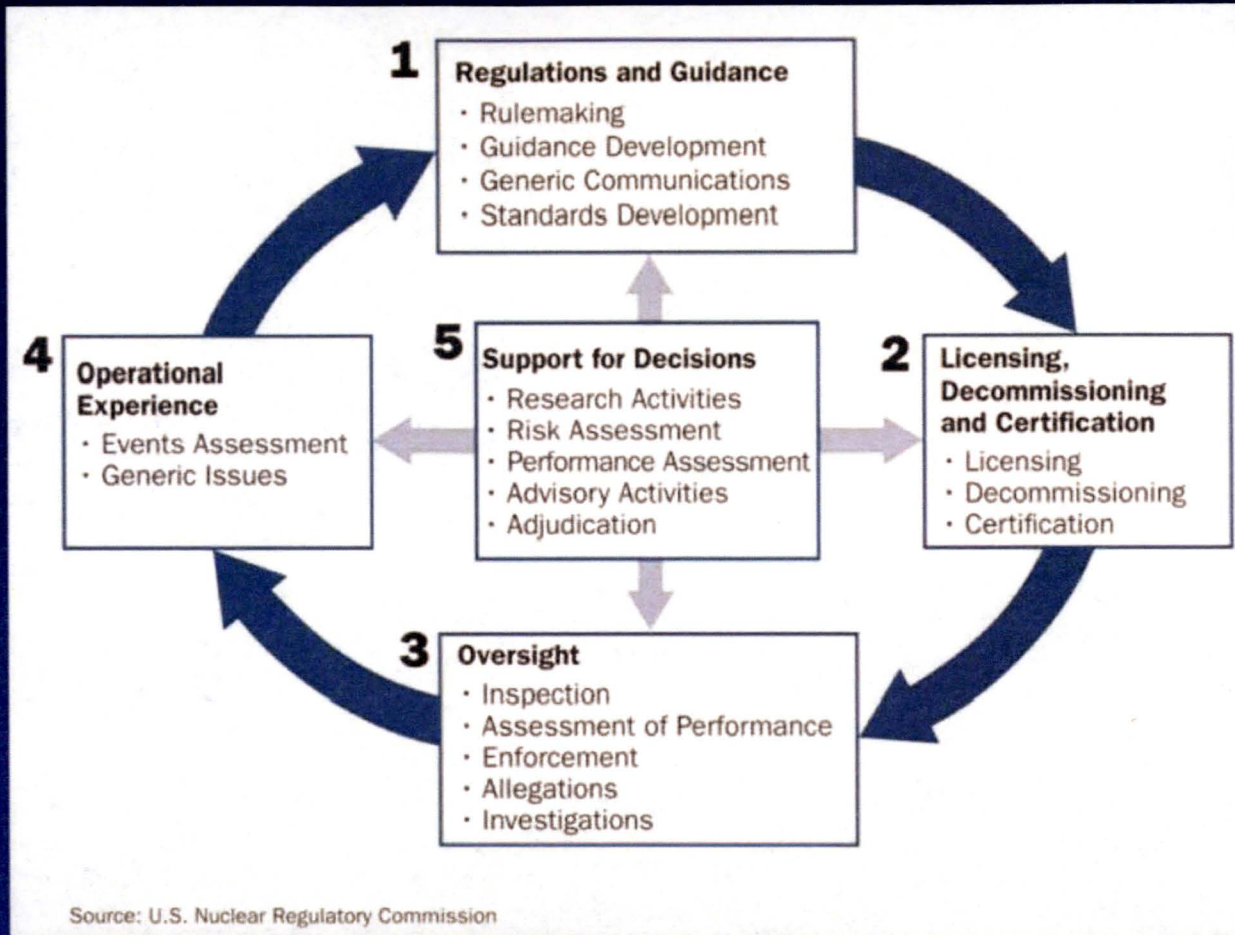
Some Nuclear Facts

Fuel Cycle Facilities

- 1 conversion facility
- 6 enrichment facilities (one operating, one in cold standby, one operating with further construction, and three under construction)
- 6 fuel fabrication facilities
- 1 mixed oxide fuel fabrication facility (under construction and review)
- 1 Deconversion facility (proposed)



What We Do:



What We Don't Do:

- Regulate nuclear weapons, military reactors, DOE research and test reactors, or space vehicle reactors. (These are regulated by other federal agencies.)
- Promote nuclear power. (The nation's nuclear agenda is set by the President and the Congress.)
- Own or operate nuclear power plants.
- Regulate naturally occurring radon and X-rays (These are regulated by states or other federal agencies.)

✓ Create Regulations

NRC establishes rules that users of radioactive material must follow. These rules protect workers and the public from the potential hazards from using radioactive material.

Before writing or changing the regulations, NRC solicits and considers the views of the public, industry representatives, researchers, State and Tribal officials, scientists and technical experts.

✓ Issue Licenses

Any organization or individual intending to have or commercially use nuclear materials that are covered by NRC's programs must obtain a license from the NRC or an Agreement State (a state that has entered into an agreement with the NRC to regulate nuclear materials).

These licenses specify the types and quantities of material, the activities it may be used for and additional conditions.

✓ Provide Oversight

The NRC inspects licensed facilities to ensure they are safe and secure and that they meet regulations and the terms of their license. By regularly assessing facility performance, the NRC is able to provide an objective perspective. Each reactor site receives thousands of hours of inspections each year.



The NRC also investigates any allegations of wrongdoing.

✓ Enforce Regulations

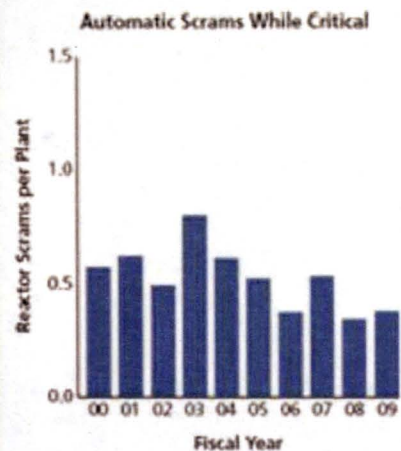
When violations are uncovered, the NRC can:

- Issue a notice of violation;
- Impose fines of up to \$140,000 per violation, per day;
- Modify, suspend or revoke a license, for very serious instances of noncompliance; and
- Refer violations involving potential criminal acts to the Department of Justice for review.

✓ Evaluate Operations

The NRC collects and analyzes information about events

Industry Performance Indicators: Annual Industry Averages
FY 2000–2009—for 104 Plants (Continued)



A reactor is said to be "critical" when it achieves a self-sustaining nuclear chain reaction such as when the reactor is operating. The sudden shutting down of a nuclear reactor by rapid insertion of control rods, either automatically or manually by the reactor operator, is referred to as a "scram." This indicator measures the number of unplanned automatic scrams that occurred while the reactor was critical.

at nuclear facilities to assess plant safety and security and identify any significant weaknesses in plant design, operations or equipment in plant design, operations or equipment.

The NRC also identifies and addresses significant safety-related

issues that are common among plants of similar designs (called generic safety issues).

Open To The Public

The NRC places a high priority on keeping the public and stakeholders informed of its activities. At www.nrc.gov, you can:

- Find licenses and inspection reports; public meeting dates and transcripts;
- Read NRC testimony, speeches, press releases and policy decisions; and
- Access the agency's Electronic Reading Room to find NRC publications and documents.



Analysis of Cancer Risks Study Request

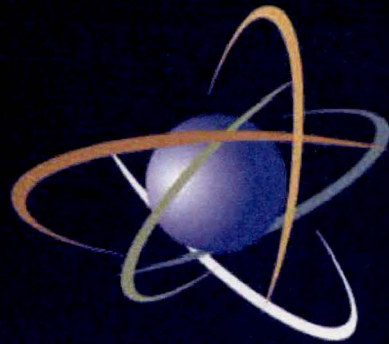
- NRC identified and initiated project to develop up-to-date cancer risk information for responding to recurrent stakeholder concerns
- Agency wide interest in performing the new study



Study Request

- The 1990 National Cancer Institute (NCI) report “Cancer in Populations Living Near Nuclear Facilities” should be updated
 - Demographic changes in the last 20 years
 - Limited cancer incidence information
 - Does not include facilities operated after 1982
 - Staff desire to reduce the county size study unit to something smaller





U.S.NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment

Study Expectations and Technical Considerations

Terry A. Brock, Ph.D.

Senior Program Manager

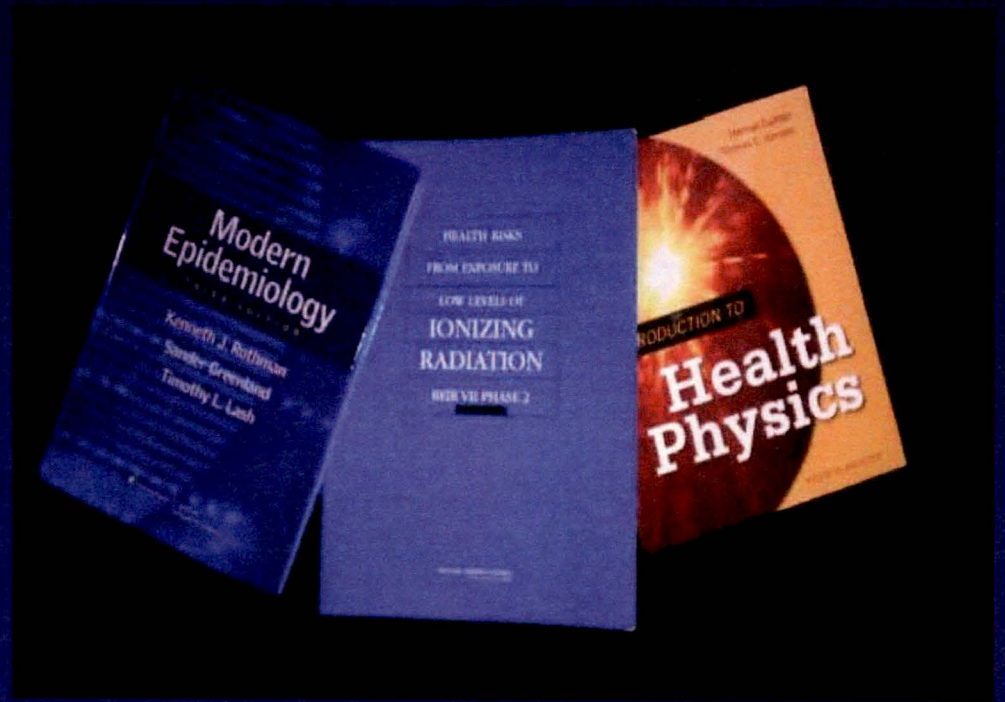
February 24, 2011

Expectations

- Ensure an open, credible, and objective study with opportunities for stakeholder input
 - Webcast public meetings
 - Hold meetings in different geographical regions of the U.S.
 - Provide opportunity for public comment on study recommendations for NRC consideration

Expectations

- Up front consideration of off-site radiation doses from facility operations to inform health study design

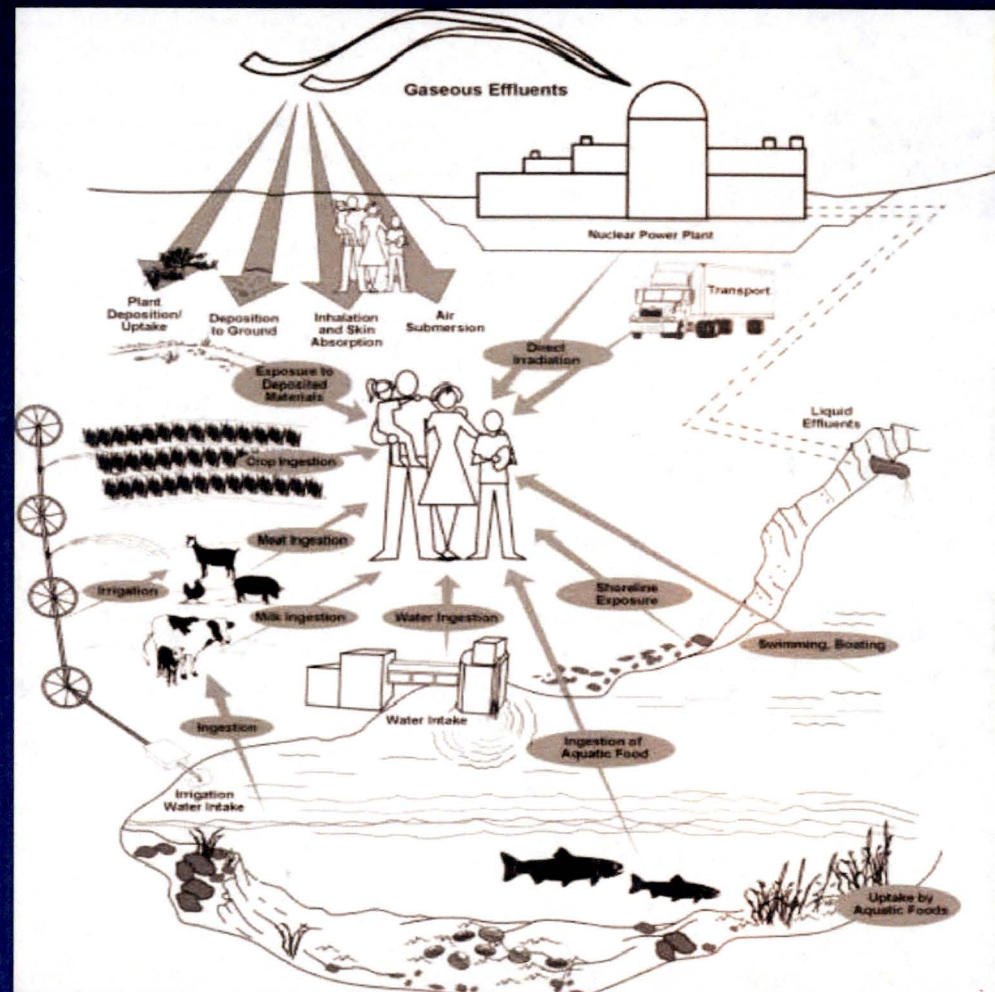


Expectations

- Determine whether a technically defensible approach to meet the goals of the study request is feasible – and if so, develop recommendations for phase 2 using scientifically sound processes for evaluating whether nuclear facilities pose a cancer risk

Dose Considerations

- Pathways, receptors, and source terms
- NRC's program to keep off-site doses As-Low-As-Reasonably-Achievable (ALARA)



Dose Considerations

- Address completeness, and quality of information on gaseous and liquid radioactive releases and direct radiation exposure from nuclear facilities

Dose Considerations

- Address potential methodological limitations arising from the variability in radioactive releases over time and other confounding factors

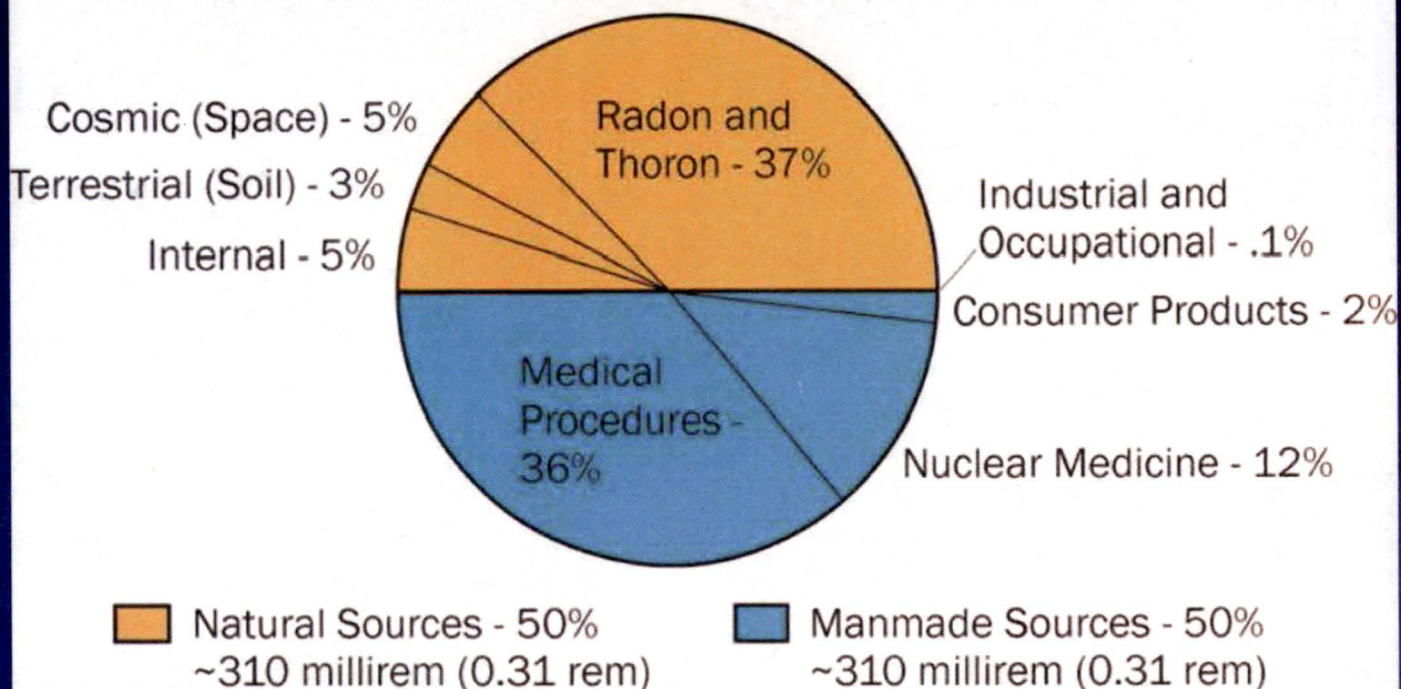
Sources of Radiation

Radiation occurs naturally in the soil, air and water. The average dose to people in the U.S. is about 620 millirem (6.2 mSv) of radiation a year. Half of that exposure comes from natural sources (also called background radiation). The other half largely comes from nuclear medical exams and treatments. Small amounts of radioactive material are also used in common items such as smoke detectors, exit signs and some watches.



Average Dose

Sources of Radiation Exposure in the United States



Source: NCRP Report No.160(2009)

Full report is available on the NCRP Web site at www.NCRPpublications.org.

Regulatory Framework

- All NRC radiation protection regulations stem from 10 CFR Part 20, “Standards for Protection Against Radiation”
- 10 CFR Part 50, “Domestic Licensing of Production and Utilization Facilities”, includes the implementation requirements for nuclear power reactors to comply with Part 20

10 CFR Part 20

- Public dose limits (Subpart D)
 - 100 mrem/yr (1 mSv/yr) total effective dose equivalent per reactor
 - A total of 25 mrem/yr whole body, 75 mrem/yr thyroid, and 25 mrem/yr to critical organ from all fuel cycle facilities within 50 mile radius (0.25 mSv/yr | 0.75 mSv/yr | 0.25 mSv/yr) (EPA, 40 CFR 190)

10 CFR Part 20 cont.

- Public exposures must be kept ALARA
- Releases must be monitored to demonstrate compliance
- Releases must be monitored to evaluate: magnitude and extent, concentration and quantity, and potential radiological hazards

10 CFR Part 50

- Part 50.34a – Effluent releases must be controlled
- Part 50.36a – Licensees must have an effluent release program to keep annual releases ALARA and report results
- Appendix A – General Design Criteria (GDC)
 - GDC 60, Each plant must have a means to control liquid and gaseous effluent releases
 - GDC 64, Each plant must monitor effluent discharge paths and plant environs for radioactivity

10 CFR Part 50 cont.

- Appendix I – ALARA Numerical Dose Objectives
 - Liquid pathways
 - 3 mrem/yr (0.03 mSv/yr), total body
 - 10 mrem/yr (0.1 mSv/yr), critical organ
 - Gaseous pathways
 - 5 mrem/yr (0.05 mSv/y), total body (noble gases);
 - 15 mrem/yr (0.15 mSv/yr), critical organ (iodine and particulate radionuclides)

Effluent Releases

- Reactor licensees are required to monitor and report annual radiological effluent releases
 - Gaseous, liquid, and abnormal releases
 - Curies/year by radionuclide and summary role-up
 - Annual report for every plant
- Fuel cycle licensees report every 6 months



Study Design

- Demographic characteristics of the study and control populations (e.g., all age groups, including children and nuclear facility workers)
- Geographic areas to use in the study (e.g., county, zip codes, census tracts, or annular rings around the facility at some nominal distances)

Study Design cont.

- Cancer types and endpoints (i.e., incidence, mortality)
- Availability, completeness, and quality of cancer incidence and mortality data

Study Design cont.

- Different epidemiological study designs and statistical assessment methods (e.g., ecologic, cohort, case-control)

Study Design cont.

- Address potential methodological limitations arising from
 - low statistical power,
 - random clustering,
 - changes in population characteristics over time,
 - and other confounding factors

Questions & Answers

From: Brock, Terry
Sent: 14 Apr 2011 17:36:03 +0000
To: 'Kosti, Ourania'
Subject: NRC-NAS_Analysis_Cancer_Risk_Meeting2_Chicago_041811.pptx
Attachments: NRC-NAS_Analysis_Cancer_Risk_Meeting2_Chicago_041811.pptx

Rania,

Here you go. This is the NRC presentation to use for Monday, 4/18.

Terry

From: Brock, Terry
Sent: 17 Mar 2011 14:39:36 +0000
To: 'Kosti, Ourania';Wingo, Erin
Subject: RE: NRC's listserve

Erin,
Shoot Scott an e-mail with your request. He may not get back to you right away because he is swamped responding to the Japanese event.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, March 17, 2011 9:24 AM
To: Brock, Terry
Cc: Wingo, Erin
Subject: NRC's listserve

Hello Terry,
Please remind me what we concluded as to how you want to deal with the possibility that we gain access to your listserve. Should Erin (cc-ed on the email), our communication liaison, contact Scot directly or are you looking into it and will let us know?
Thank you for the clarification –
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 4 Apr 2011 12:52:48 -0400
To: Brock, Terry
Subject: RE: NRC's presentation

Cheers! I should be sending you the complete list of topics we wish U.S.NRC to touch on shortly. We will divide the list of topics for the 'plenary' session which we keep basic and the 'dosimetry working group' session where we get into more technical details.

Do you know who is attending the meeting from your team, if yes, please send me the list of names at your convenience so that we prepare name tags.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, April 04, 2011 12:43 PM
To: Kosti, Ourania
Subject: RE: NRC's presentation

Here you go >>

NRC's Program for Keeping Nuclear Power Plant Offsite Doses As Low As Reasonably Achievable (ALARA)
by
Steven Schaffer, Ph.D., Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Monday, April 04, 2011 11:54 AM
To: Brock, Terry
Subject: NRC's presentation

Terry,

We will need to post the public agenda today for meeting #2 in Chicag. Do you know what the title of the U.S.NRC's presentation would be and who the presenter is?

Thank you –
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066

fax: 202 334 3077
email: okosti@nas.edu

From: Crowley, Kevin
Sent: 8 Apr 2010 11:00:56 -0400
To: Brock, Terry
Subject: RE: NRSB Meeting

Thanks Terry. I was planning to have Brian go first for the session on our study. We have a couple of additional unrelated topics that I would like to deal with before we get to your session.
Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, April 08, 2010 10:59 AM
To: Crowley, Kevin
Subject: RE: NRSB Meeting

I have him blocked off all afternoon, so 2 should be ok. I do request that we go first if the afternoon session is going to focus on the study.

Thanks,
Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Thursday, April 08, 2010 10:57 AM
To: Brock, Terry
Subject: NRSB Meeting

Terry:

I am trying to deal with some scheduling conflicts for our April 26 NRSB meeting. Could you check Brian's schedule to see if there would be a problem if we moved the time for his presentation from 1 pm to 2 pm? I am assuming that he will want 30 minutes for his presentation.

Thanks,

Kevin

From: Crowley, Kevin
Sent: 19 Mar 2010 16:47:37 -0400
To: Brock, Terry
Subject: Re: NRSB meeting

Many thanks Terry--I'll call you after I return.

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Fri Mar 19 11:33:33 2010
Subject: RE: NRSB meeting

Hi Kevin,

I think this is a good idea for NRC to address the NRSB . . . I'll work it up the chain. I'm glad to hear Bill is keeping busy.

On the study front . . . We've notified the Chairman of our plans to pursue the npp cancer risk study with the National Academies. When you get back let's coordinate on getting the project started. I would also like to get our public affairs people together to ensure a common awareness of when NRC notifies the public that we are requesting the National Academies to perform the study, so we can both be ready to respond to any inquiries.

Thanks,
Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Thursday, March 18, 2010 4:20 PM
To: Brock, Terry
Subject: NRSB meeting

Hi Terry:

Dick Meserve and I have started organizing the public session of the spring NRSB meeting, which will be held on April 26 at our Keck Center facility. We were wondering if the USNRC would be interested in talking with the board about the NPP health effects study. It would be a good opportunity to explain the study objectives/concerns in a technical forum.

We have hosted both commissioners and staff at previous board meetings. During the past three years or so we have had Dale Klein, Greg Jaczko, and Patty Bubar speak at our meetings.

There is no immediate hurry on a response as I am still in Europe. I wanted to give you advance notice so you have time to work your concurrence chain if necessary.

I'll be back in the office on March 24.

I'm at the IAEA this week and ran into Bill Brock in a U Bahn station of all places. He retired from the USNRC recently and is now involved in IAEA committee work. It is a small world.

Regards,

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Kosti, Ourania
Sent: 29 Mar 2011 13:20:38 -0400
To: Brock, Terry
Subject: RE: nuclear facilities tour

Thank you, I appreciate it.
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, March 29, 2011 1:19 PM
To: Kosti, Ourania
Subject: RE: nuclear facilities tour

No problem. Call Willie Harris in their corporate office at +1 610 765 5350

He should be able to help..

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, March 29, 2011 1:11 PM
To: Brock, Terry
Subject: RE: nuclear facilities tour

Terry,

I am sorry for bothering you again. I want to contact Exelon to brief us on their facilities and practices but as I suspected the general numbers on their site have not taken me far with my request. Any thoughts as to who I can contact?

Thank you –

Rania

From: Kosti, Ourania
Sent: Tuesday, March 29, 2011 12:06 PM
To: 'Brock, Terry'
Subject: RE: nuclear facilities tour

We have two unsures, total 9 committee members and 4 staff. Please let me know when you become confident the tour (and what plant) is happening so that I send the memo to the committee to make flight/accommodation arrangements.

-
committee

John Burris
Patricia Culligan
Andre Bouville
Daniel Stram
Gayle Woloschak
Sharon Murphy
James Klaunig
Roy Shore (?)

Jeff Wong (?)

Staff

Kevin Crowley
Ourania Kosti
Erin Wingo
Shauntee Whetstone

Again, thank you very much –
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, March 29, 2011 11:51 AM
To: Kosti, Ourania
Subject: RE: nuclear facilities tour

Send ten names over and I'll start the paperwork.

Terry
Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

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Sent: Tuesday, March 29, 2011 11:18 AM
To: Brock, Terry
Subject: RE: nuclear facilities tour

Terry,
Again, many thanks for making the effort to arrange the tour. We have 7-8 committee members interested in the tour +4 staff.
I should note that I am planning on contacting Exelon to brief us during the open session.

Thank you –
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Sent: Tuesday, March 29, 2011 9:57 AM

To: Kosti, Ourania
Subject: RE: nuclear facilities tour

Let me see what I can do.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, March 29, 2011 9:10 AM
To: Brock, Terry
Subject: nuclear facilities tour

Dear Terry,

We were wondering whether you could help us organize the nuclear facility tours for Wednesday 20th April in Illinois. Our NEI contact, Ralph Andersen seems to be preoccupied with the events in Japan and we have had no response. As you know our plan was to split our group and some of us visit the Dresden plant and the rest the Braidwood plant. If this is not possible, visiting one of the two is still a good plan and possibly Braidwood would be the one we would choose given the local interest due to the past inadvertent releases. Please let me know if you think this is correct.

Please let me know whether you think you can arrange the tour for us. If not, I am sure we will have the opportunity to tour a plant in subsequent meetings.

Kevin is working from home today, but I know that he is planning on contacting you to discuss the statement of task edits.

Best,

Rania

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Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 31 Mar 2011 08:02:37 -0400
To: Brock, Terry
Subject: RE: nuclear facilities tour

Terry, any progress on the tour? Please note that Roy Shore is out, I still have not heard from Jeff Wong. Also, I have not heard back from Willie Harris but will leave another message today.

Hope all is well!
Rania

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To: 'Brock, Terry'
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Kevin Crowley
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phone: 301-251-7487

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Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 6 Apr 2011 15:50:44 -0400
To: Brock, Terry
Subject: RE: nuclear facilities tour

Please do, thank you –
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, April 06, 2011 3:33 PM
To: Kosti, Ourania
Subject: RE: nuclear facilities tour

Rania,
We can only do ten. Ok to remove Shauntee from the list?
Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, April 05, 2011 5:36 PM
To: Brock, Terry
Subject: RE: nuclear facilities tour

Terry,
I wanted to let you know that there are some changes in the committee list (Shore, Wong, Klauning are out, Karagas is in). I apologize for the constant changes, I wish I did not have to do that! The updated list is below.

committee

John Burris
Patricia Culligan
Andre Bouville
Daniel Stram
Gayle Woloschak
Sharon Murphy
Margaret Karagas

Staff

Kevin Crowley
Ourania Kosti
Erin Wingo
Shauntee Whetstone

Regards,
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, March 29, 2011 1:19 PM

To: Kosti, Ourania
Subject: RE: nuclear facilities tour

No problem. Call Willie Harris in their corporate office at +1 610 765 5350

He should be able to help..

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, March 29, 2011 1:11 PM
To: Brock, Terry
Subject: RE: nuclear facilities tour

Terry,

I am sorry for bothering you again. I want to contact Exelon to brief us on their facilities and practices but as I suspected the general numbers on their site have not taken me far with my request. Any thoughts as to who I can contact?

Thank you –
Rania

From: Kosti, Ourania
Sent: Tuesday, March 29, 2011 12:06 PM
To: 'Brock, Terry'
Subject: RE: nuclear facilities tour

We have two unshures, total 9 committee members and 4 staff. Please let me know when you become confident the tour (and what plant) is happening so that I send the memo to the committee to make flight/accommodation arrangements.

committee

John Burris
Patricia Culligan
Andre Bouville
Daniel Stram
Gayle Woloschak
Sharon Murphy
James Klaunig
Roy Shore (?)
Jeff Wong (?)

Staff

Kevin Crowley
Ourania Kosti
Erin Wingo
Shauntee Whetstone

Again, thank you very much –
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, March 29, 2011 11:51 AM
To: Kosti, Ourania
Subject: RE: nuclear facilities tour

Send ten names over and I'll start the paperwork.

Terry
Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, March 29, 2011 11:18 AM
To: Brock, Terry
Subject: RE: nuclear facilities tour

Terry,
Again, many thanks for making the effort to arrange the tour. We have 7-8 committee members interested in the tour +4 staff.
I should note that I am planning on contacting Exelon to brief us during the open session.

Thank you –
Rania

From: Kosti, Ourania
Sent: Tuesday, March 29, 2011 10:07 AM
To: 'Brock, Terry'
Subject: RE: nuclear facilities tour

We appreciate it.
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, March 29, 2011 9:57 AM
To: Kosti, Ourania
Subject: RE: nuclear facilities tour

Let me see what I can do.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, March 29, 2011 9:10 AM
To: Brock, Terry
Subject: nuclear facilities tour

Dear Terry,

We were wondering whether you could help us organize the nuclear facility tours for Wednesday 20th April in Illinois. Our NEI contact, Ralph Andersen seems to be preoccupied with the events in Japan and we have had no response. As you know our plan was to split our group and some of us visit the Dresden plant and the rest the Braidwood plant. If this is not possible, visiting one of the two is still a good plan and possibly Braidwood would be the one we would choose given the local interest due to the past inadvertent releases. Please let me know if you think this is correct.

Please let me know whether you think you can arrange the tour for us. If not, I am sure we will have the opportunity to tour a plant in subsequent meetings.

Kevin is working from home today, but I know that he is planning on contacting you to discuss the statement of task edits.

Best,

Rania

Ourania (Rania) Kostis, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Crowley, Kevin
Sent: 30 Aug 2010 08:36:18 -0400
To: Brock, Terry
Subject: RE: on vacation from 8/13-8/27

Terry:

Welcome back. I hope that you had a good vacation—and that you enjoyed Ireland.

We have been unable to get Shelia Bumpass to send us a corrected set of award documents. We are sitting on the original set. Please advise on what you would like us to do.

Thanks,

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, August 09, 2010 10:58 AM
To: Crowley, Kevin
Cc: Bush-Goddard, Stephanie
Subject: on vacation from 8/13-8/27

Hi Kevin,

I will be (b)(6) unavailable from Friday, 8/13/10, returning on Monday 8/30/10.
Please contact my branch chief, Stephanie Bush-Goddard, if any cancer study questions come up. I cc her so you'll have her e-mail and you can reach her by phone at 301-251-7528.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Crowley, Kevin
Sent: 9 Aug 2010 11:12:46 -0400
To: Brock, Terry
Subject: RE: on vacation from 8/13-8/27

Will do, Terry. (b)(6)

From: Brock, Terry [Terry.Brock@nrc.gov]
Sent: Monday, August 09, 2010 10:58 AM
To: Crowley, Kevin
Cc: Bush-Goddard, Stephanie
Subject: on vacation from 8/13-8/27

Hi Kevin,

I will be (b)(6) unavailable from Friday, 8/13/10, returning on Monday 8/30/10. Please contact my branch chief, Stephanie Bush-Goddard, if any cancer study questions come up. I cc her so you'll have her e-mail and you can reach her by phone at 301-251-7528.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Brock, Terry
Sent: 23 Apr 2011 11:25:42 +0000
To: Kosti, Ourania
Subject: RE: ORAU contact

Hi Rania

The ORAU contact is Dr. Donna Cragle at (865) 576-3115.

Terry

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Thursday, April 21, 2011 1:56 PM
To: Brock, Terry
Subject: ORAU contact

Hello Terry,

Hope you had a comfortable trip back home. Thank you again for all your help with organizing the tour and your input in organizing the meeting. We felt it was a successful meeting.

Now we are looking into meeting #3 in Atlanta. The committee would like to hear from representatives of the ORAU study. Do you have a contact name/info for the person that was leading the study?

Thank you –

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 30 Nov 2011 17:44:58 -0500
To: Brock, Terry
Subject: RE: phase 1 report comment resolution

Kevin's office: 202 334 3198.
Tomorrow, 2:30 PM Thank you. Rania

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Wednesday, November 30, 2011 5:43 PM
To: Kosti, Ourania
Subject: RE: phase 1 report comment resolution

ok, give me a number and we'll call you.

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Wednesday, November 30, 2011 3:57 PM
To: Brock, Terry
Subject: RE: phase 1 report comment resolution

What about 2:30 - 3:00 for the call?
Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Wednesday, November 30, 2011 2:33 PM
To: Kosti, Ourania
Subject: RE: phase 1 report comment resolution

Hello,

Tomorrow at 1 or 2 would work or later in the afternoon.

Terry

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Wednesday, November 30, 2011 9:14 AM
To: Brock, Terry
Subject: RE: phase 1 report comment resolution

Dear Terry,
I hope this email finds you well. Are you available Thursday or Friday to talk on the phone and continue the discussion on the phase I comments? If yes, please suggest a couple of time options.
Thank you -
Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Wednesday, November 16, 2011 6:04 PM
To: Crowley, Kevin; Kosti, Ourania
Subject: phase 1 report comment resolution

How about Monday? This public comment reconciliation seems to be a high priority on NRC management's mind.

I think a path forward is for the committee to post a "draft" phase 1 report in pdf format on the study website and solicit public comments for 2 months instead of publishing a final report and then asking for public comments knowing a priori you are not going to change the report regardless of what is commented on-for reference, ICRP and NCRP hold a public comment period before finalizing their documents. After the comment period have the committee reconcile the comments and change or not change the report depending on their judgment of the value of the comment on their work. Once the comments are addressed and all committee members are satisfied with the draft then you would start the formal internal NAS process of peer review and approval to publish the final report. The final report would include an appendix for public comment disposition. I think it would be more efficient and less confusing to NRC, the public, and the future phase 2 committee to do all this in one report than to develop an additional report that only addresses the public comments and may technically disagree/contradict with the phase 1 recommendations.

We'll have to tweak the schedule a bit, but there should be enough funds to do this since there is no planned 6th meeting. The 6th meeting could be the comment reconciliation gathering. A less desirable alternative is that we don't submit the report for public comment and NRC lives with the report as intended by the committee. I think the least desirable alternative is that NAS request comments but the committee does not formally respond. I think that will put NRC and NAS staff in a difficult position to defend and respond to comments on a document not authored by either entity-possibly and unnecessarily casting a shadow over the technical quality of phase 1 recommendations and making it more difficult for NRC to proceed with phase 2.

Let's try and discuss soon.
Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Wednesday, November 16, 2011 3:16 PM
To: Brock, Terry; Crowley, Kevin
Subject: RE: 2012 RIC presentation on cancer study

Dear Terry,

Thank you for the message regarding RIC and the update.
Regarding the issue of handling of public comments: it seems that we will have to wait till after thanksgiving to discuss. Kevin and I are working on sending the updated report draft to the committee today and as I mentioned, Kevin is traveling next week. If you want, to keep the conversation moving, we could try to resolve some of the issue by email; Kevin's participation in the discussion is important.

Thank you -

Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Wednesday, November 16, 2011 3:11 PM
To: Kosti, Ourania; Crowley, Kevin
Subject: RE: 2012 RIC presentation on cancer study

Incoming news: I just heard we don't need a RIC confirmation for John until Dec. 1, 2012. Kevin- if you remember from last year there is a form you have to sign confirming your participation. I'll get the form to you once John is confirmed or if you have another idea for a speaker.

Thanks and I look forward to hearing from you, Terry

From: Brock, Terry
Sent: Wednesday, November 16, 2011 2:26 PM
To: 'Kosti, Ourania'; 'Crowley, Kevin'
Subject: 2012 RIC presentation on cancer study

Hi Kevin/Rania,

I left a message for both of you. The 2012 NRC Regulatory Information Conference (RIC) planning has begun and is scheduled for March 13-15, 2012. This year we plan to have one talk on the cancer study in a broader radiation protection and health effects session. I tentatively put down John Burriss as a possible speaker to discuss the results of phase 1-It should be out for review by then and he can provide an overview of the committee findings and recommendations. Please let me know if there are any issues with him presenting, but after how well he did at the NFS meeting I think he is ready for prime-time.

We got word the Commission is not planning on having a public briefing on the phase 1 study results so I strongly suggest we use the RIC venue to get the word out on the results.

Also, let me know a good time to talk about the handling of public comments on the phase 1 report.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania
Sent: 16 Nov 2011 18:27:29 -0500
To: Brock, Terry;Crowley, Kevin
Subject: RE: phase 1 report comment resolution

Terry,

I hope to get the chance to discuss your email with Kevin on Monday before he leaves for his trip; thank you for laying out your thoughts.

It seems that it is a longer discussion than I originally thought, and at the moment the priority is to move forward with the report writing. It is best if we schedule the discussion when Kevin returns.

Thanks,

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, November 16, 2011 6:04 PM
To: Crowley, Kevin; Kosti, Ourania
Subject: phase 1 report comment resolution

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I think a path forward is for the committee to post a "draft" phase 1 report in pdf format on the study website and solicit public comments for 2 months instead of publishing a final report and then asking for public comments knowing a priori you are not going to change the report regardless of what is commented on—for reference, ICRP and NCRP hold a public comment period before finalizing their documents. After the comment period have the committee reconcile the comments and change or not change the report depending on their judgment of the value of the comment on their work. Once the comments are addressed and all committee members are satisfied with the draft then you would start the formal internal NAS process of peer review and approval to publish the final report. The final report would include an appendix for public comment disposition. I think it would be more efficient and less confusing to NRC, the public, and the future phase 2 committee to do all this in one report than to develop an additional report that only addresses the public comments and may technically disagree/contradict with the phase 1 recommendations.

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Let's try and discuss soon.

Thanks,

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Wednesday, November 16, 2011 3:16 PM
To: Brock, Terry; Crowley, Kevin
Subject: RE: 2012 RIC presentation on cancer study

Dear Terry,

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Thank you –

Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Wednesday, November 16, 2011 3:11 PM
To: Kosti, Ourania; Crowley, Kevin
Subject: RE: 2012 RIC presentation on cancer study

Incoming news: I just heard we don't need a RIC confirmation for John until Dec. 1, 2012. Kevin- if you remember from last year there is a form you have to sign confirming your participation. I'll get the form to you once John is confirmed or if you have another idea for a speaker.

Thanks and I look forward to hearing from you,
Terry

From: Brock, Terry
Sent: Wednesday, November 16, 2011 2:26 PM
To: 'Kosti, Ourania'; 'Crowley, Kevin'
Subject: 2012 RIC presentation on cancer study

Hi Kevin/Rania,

I left a message for both of you. The 2012 NRC Regulatory Information Conference (RIC) planning has begun and is scheduled for March 13-15, 2012. This year we plan to have one talk on the cancer study in a broader radiation protection and health effects session. I tentatively put down John Burris as a possible speaker to discuss the results of phase 1—It should be out for review by then and he can provide an overview of the committee findings and recommendations. Please let me know if there are any issues with him presenting, but after how well he did at the NFS meeting I think he is ready for prime-time.

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Also, let me know a good time to talk about the handling of public comments on the phase 1 report.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania
Sent: 5 Sep 2012 11:14:33 -0400
To: Brock, Terry
Subject: RE: Phase 1 report cover image
Attachments: cancer risk cover.jpg

Dear Terry,
I attach a 300 dpi jpg. Please let me know whether you have received this and whether it works for your needs.
Rania

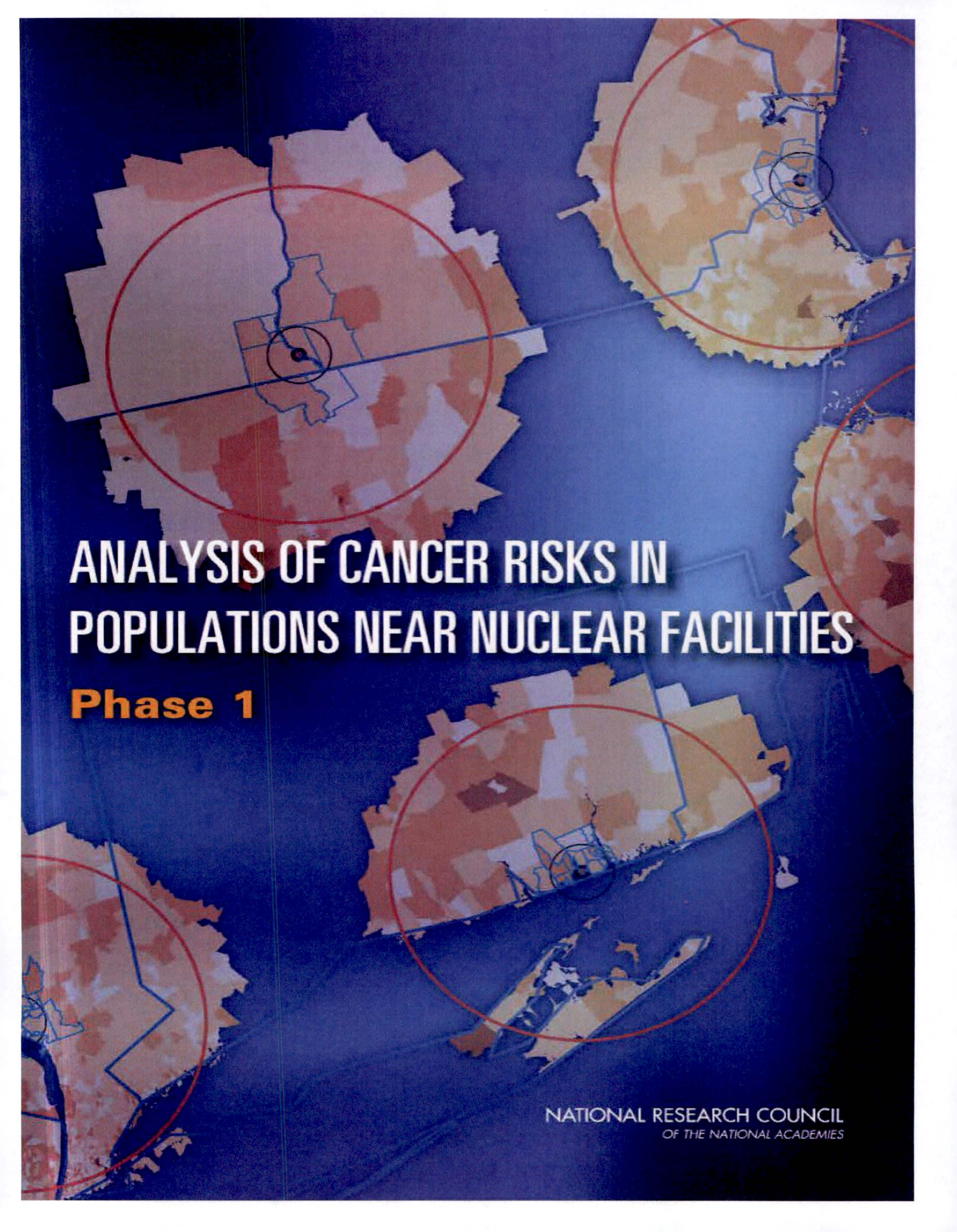
From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, September 05, 2012 8:20 AM
To: Kosti, Ourania
Subject: Phase 1 report cover image

Hi Rania,

I left a message yesterday. Do you have an image of the Phase 1 report cover that I could use for a presentation? The image on the NAS website is low resolution and doesn't do justice to the nice graphic you all created.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

An aerial photograph of the United States is shown with several red circles overlaid on it. These circles are centered on various locations, likely representing nuclear facilities. The circles are of varying sizes and are connected by thin lines. The background is a dark blue color.

ANALYSIS OF CANCER RISKS IN POPULATIONS NEAR NUCLEAR FACILITIES

Phase 1

NATIONAL RESEARCH COUNCIL
OF THE NATIONAL ACADEMIES

From: Kosti, Ourania
Sent: 27 Jan 2012 11:33:59 -0500
To: Brock, Terry
Subject: RE: Phase 1 rollout

Terry, Wednesday 5 PM it is.

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Friday, January 27, 2012 10:14 AM
To: Kosti, Ourania
Subject: RE: Phase 1 rollout

Hi,

I looked at the training schedule and we get done at 4. How about a call at 5 on Monday or Wednesday? This will give me enough time to get from the training spot back to my office?

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Friday, January 27, 2012 10:06 AM
To: Brock, Terry
Subject: RE: Phase 1 rollout

Unfortunately this will not work for Kevin and me. We can schedule the call the week after your training. Thank you. Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Friday, January 27, 2012 9:46 AM
To: Kosti, Ourania
Subject: RE: Phase 1 rollout

I'm in training all week next week. How about a phone call later this afternoon.

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Friday, January 27, 2012 9:44 AM
To: Brock, Terry
Subject: RE: Phase 1 rollout

Hello Terry,

I am working from home today and this is a discussion we should involve Kevin. Would Monday sometime between 1-3:30 PM work for you?

Thank you –
Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Friday, January 27, 2012 9:11 AM
To: Kosti, Ourania
Subject: Phase 1 rollout

Hi Rania,

Do you have some time today to talk some more about the Phase 1 roll-out.

I'm curious if we are going to get an advance copy and briefings to different levels of NRC staff before it is made public?

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania
Sent: 26 Feb 2015 11:29:42 -0500
To: Brock, Terry
Subject: RE: phone call tomorrow

Terry:

I am available but Kevin is leaving for a week-long trip to Japan. Can we still talk or, if you prefer, you and I talk and involve Rebecca and Kevin at a call the week of March 9?

Thanks,

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]

Sent: Thursday, February 26, 2015 11:26 AM

To: Kosti, Ourania

Subject: phone call tomorrow

Hi Rania,

Rebecca and I would like to talk to you and Kevin about some initial impressions we have received on the pilot execution study. Are you two available tomorrow for a call?

Terry

From: Brock, Terry
Sent: 15 Apr 2011 16:49:16 +0000
To: 'Kosti, Ourania'
Subject: RE: phone number for Richard?

Here you go>> Richard Conatser: 301-415-4039

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Friday, April 15, 2011 12:47 PM
To: Brock, Terry
Subject: RE: phone number for Richard?

Hi Terry,
Shauntee, our assistant who is communicating with the hotel is not here right now. It is easier if you give me the number we can reach Richard.
Thank you –
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, April 15, 2011 12:07 PM
To: Kosti, Ourania
Subject: phone number for Richard?

Hi Rania,

Do you have the phone number for Richard to call-in on Monday? I would like to give it to him before the weekend.

Thanks,
Terry

From: Kosti, Ourania
Sent: 14 Apr 2011 11:13:28 -0400
To: Brock, Terry
Subject: Re: Please hold: RE: NRC-NAS_Analysis_Cancer_Risk_ Meeting2_Chicago_041811.pptx

OK!

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, April 14, 2011 10:38 AM
To: Brock, Terry <Terry.Brock@nrc.gov>; Kosti, Ourania
Subject: Please hold: RE: NRC-NAS_Analysis_Cancer_Risk_ Meeting2_Chicago_041811.pptx

Rania,

Please don't post these yet. I need to make a small change and will resend later today.

Thanks,
Terry

From: Brock, Terry
Sent: Thursday, April 14, 2011 10:22 AM
To: 'Kosti, Ourania'
Subject: NRC-NAS_Analysis_Cancer_Risk_ Meeting2_Chicago_041811.pptx

Rania,

Attached are the NRC presentation slides for the Chicago meeting on 4/18.

Terry

From: Kosti, Ourania
Sent: 24 Jun 2011 14:08:57 -0400
To: Brock, Terry
Subject: Re: pls call

I am driving to Georgetown Hospital for a talk I was invited to give. Should be able to call a bit before 3pm.

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, June 24, 2011 02:05 PM
To: Kosti, Ourania
Subject: pls call

Rania,
Would you please call me when you get a chance.
301-251-7487

Thanks,
Terry

From: Crowley, Kevin
Sent: 9 Mar 2011 14:31:12 -0500
To: Shaffer, Vered
Cc: Brock, Terry;Kosti, Ourania;Crowley, Kevin
Subject: RE: Presentation for Thursday
Attachments: KD Crowley, USNRC-RIC presentation, March 10, 2011.ppt

Vered:

Attached are my slides for tomorrow's RIC presentation.

Kevin

From: Shaffer, Vered [mailto:Vered.Shaffer@nrc.gov]
Sent: Tuesday, March 08, 2011 7:44 AM
To: Crowley, Kevin
Cc: Brock, Terry
Subject: Presentation for Thursday

Good morning Kevin,

In the case that you and I happen to not connect by Thursday morning, please take your presentation directly to the RIC Registration Area to be scanned for viruses and uploaded to the laptop in the appropriate session room.

Thank you!

Vered

Vered Anzenberg Shaffer, Ph.D.
BioNuclear Engineer
Health Effects Branch
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Office 301.251.7546

 Please consider the environment before printing this e-mail

From: Kosti, Ourania
Sent: 11 Apr 2011 09:26:07 -0400
To: Brock, Terry
Subject: RE: presentation points

Good morning Terry,

Unfortunately we do not have 40 minutes to dedicate during the morning session. Is there a way that you adjust the presentation to an overview (morning) and technical (afternoon) based on what the committee has asked to hear below? In the afternoon session I have given ~ 1 hour to your presentation.

Let me know what you think –
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, April 11, 2011 9:19 AM
To: Kosti, Ourania
Subject: RE: presentation points

Rania,

I see on the agenda we only have 20 minutes during the morning session. I think we'll need 30-40 minutes to get through the presentation.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Friday, April 08, 2011 12:21 PM
To: Brock, Terry
Subject: presentation points

Terry,

The committee has asked that you please discuss the following points during your presentation. Please, let me know if the presenters need further clarifications.

Plenary session

- Number, locations of power plants
- Types of nuclear reactors (BWR and PWR) and differences in routine releases
- Brief review of licensing/relicensing process

- Overview of types and quantities of plant releases (liquid and gaseous effluents)
- Regulation of plant releases
- Overview of environmental sampling including background radiation level assessment

Dosimetry working group

- Dose assessment methods
- methodology for determining source, pathways, exposures and exposed populations/persons
- Quality control processes
- Working example; data collection on releases from Braidwood, 2007

Please send us your slides no later than Thursday 14th April so that they are forwarded to the webcast crew.

Thank you –

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Crowley, Kevin
Sent: 7 Apr 2010 10:10:41 -0400
To: Brock, Terry
Subject: RE: PRESS RELEASE - NRC Asks National Academy of Sciences to Study Cancer Risk in Populations Living Near Nuclear Power Facilities

Thanks Terry

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, April 07, 2010 10:06 AM
To: Crowley, Kevin
Subject: FW: PRESS RELEASE - NRC Asks National Academy of Sciences to Study Cancer Risk in Populations Living Near Nuclear Power Facilities

Here's the press release that has been issued internally and will go public at 11 AM. The URL will be established after it is posted on the NRC website.

From: McIntyre, David
Sent: Wednesday, April 07, 2010 10:01 AM
To: Brock, Terry
Cc: Burnell, Scott; Brenner, Eliot
Subject: FW: PRESS RELEASE - NRC Asks National Academy of Sciences to Study Cancer Risk in Populations Living Near Nuclear Power Facilities

Terry - here's the press release. Please feel free to share this immediately with Kevin Crowley at NAS.

From: OPA Resource
Sent: Wednesday, April 07, 2010 10:00 AM
To: Anzenberg, Vered; Ash, Darren; Barkley, Richard; Batkin, Joshua; Bell, Hubert; Belmore, Nancy; Bergman, Thomas; Bollwerk, Paul; Bonaccorso, Amy; Borchardt, Bill; Bozin, Sunny; Brenner, Eliot; Brock, Terry; Brown, David; Burnell, Scott; Burns, Stephen; Carpenter, Cynthia; Chandrathil, Prema; Clark, Theresa; Collins, Elmo; Collins, Sam; Couret, Ivonne; Crawford, Carrie; Cutler, Iris; Dacus, Eugene; Dapas, Marc; Davis, Chon; Davis, Roger; Dean, Bill; Decker, David; Dickman, Paul; Dricks, Victor; Droggitis, Spiros; Flory, Shirley; Franovich, Mike; Gibbs, Catina; Glass, Shayla; Haney, Catherine; Hannah, Roger; Harrington, Holly; Harves, Carolyn; Hasan, Nasreen; Hayden, Elizabeth; Holahan, Gary; Holahan, Patricia; Holian, Brian; Ibarra, Victoria; Jaczko, Gregory; Jasinski, Robert; Johnson, Michael; Jones, Andrea; Klein, Dale; Kock, Andrea; Kotzalas, Margie; Ledford, Joey; Lee, Samson; Leeds, Eric; Lepre, Janet; Lew, David; Lewis, Antoinette; Lopez, Lucia; Loyd, Susan; Lyons, James; Magwood, William; Mallett, Bruce; McCrary, Cheryl; McGrady-Finneran, Patricia; McIntyre, David; Mensah, Tanya; Mitlyng, Viktoria; Monninger, John; Montes, David; Nieh, Ho; Ordaz, Vonna; Owen, Lucy; Powell, Amy; Quesenberry, Jeannette; Reddick, Darani; Regan, Christopher; Reyes, Luis; RidsSecyMailCenter Resource; Riley (OCA), Timothy; Rohrer, Shirley; Samuel, Olive; Satorius, Mark; Schaaf, Robert; Schmidt, Rebecca; Scott, Catherine; Screnci, Diane; Shane, Raeann; Sharkey, Jeffrey; Sheehan, Neil; Sheron, Brian; Siurano-Perez, Osiris; Steger (Tucci), Christine; Svinicki, Kristine; Tabatabai, Omid; Tannenbaum, Anita; Taylor, Renee; Thadani, Ashok; Thomas, Ann; Uselding, Lara; Vietti-Cook, Annette; Virgilio, Martin; Virgilio, Rosetta; Walker-Smith, Antoinette; Weaver, Doug; Weber, Michael; Weil, Jenny; Werner, Greg; Wiggins, Jim; Williams, Evelyn; Zimmerman, Roy; Zorn, Jason
Subject: PRESS RELEASE - NRC Asks National Academy of Sciences to Study Cancer Risk in Populations Living Near Nuclear Power Facilities

To be issued in approximately one hour

Office of Public Affairs

US Nuclear Regulatory Commission

301-415-8200

OPA.Resource@nrc.gov

From: Crowley, Kevin
Sent: 7 Apr 2010 09:49:51 -0400
To: Brock, Terry
Subject: RE: press release at 11 AM

Thanks Terry.

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, April 07, 2010 9:47 AM
To: Crowley, Kevin
Subject: press release at 11 AM

Hi Kevin,

The cancer study press release is scheduled for 11 AM today. I will get a pre-view copy at 10AM and work on getting the web link to you asap.

Terry

From: Kosti, Ourania
Sent: 10 Jan 2012 11:03:21 -0500
To: Brock, Terry
Subject: RE: progress

Yes, I am in the office, please call!

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, January 10, 2012 11:02 AM
To: Kosti, Ourania
Subject: RE: progress

Hi,

My afternoon is getting full. Can you talk this hour before lunch?

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, January 10, 2012 8:45 AM
To: Brock, Terry
Subject: progress

Dear Terry,

Happy new year, my best wishes to you and your family. I am sorry I missed your call yesterday. I would be happy to talk on the phone any time this afternoon and give you an update. Let me know what time works best and I can give you a call.

Thank you –

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 26 Jul 2011 12:21:56 -0400
To: Brock, Terry
Subject: RE: project progress discussion

Terry,
Let's do 3-4 pm Wednesday August 3.
Thank you for the fwds.
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, July 26, 2011 11:42 AM
To: Kosti, Ourania
Subject: RE: project progress discussion

How about next week Wednesday, 8/3 from 11 – 12 or 3 - 4 ?

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Monday, July 25, 2011 2:20 PM
To: Brock, Terry
Subject: project progress discussion

Dear Terry,

I hope you had a comfortable trip back home.

Kevin and I would like to know if you are available next week to discuss the progress on the project. Can you please indicate your availability for August 3-5 and your preference as to whether we should be having a conference call or meeting and if the latter, the location.

Thank you –

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001

phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 9 Nov 2011 10:56:30 -0500
To: Brock, Terry
Cc: Crowley, Kevin
Subject: RE: Project Update: NAS Cancer Risk Assessment

Terry,

I will ask our communications person to send out an email that the U.S.NRC has requested that we provide more information regarding the release of the report. The report is scheduled to be released February 2012 and that March-April it is open for public comments (thus the extension of the contract until May).

Thank you –

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, November 09, 2011 10:35 AM
To: Kosti, Ourania
Subject: Fw: Project Update: NAS Cancer Risk Assessment

Rania

This isn't the date we discussed. We agreed to extend the release of the phase 1 report from late December to mid to late February. I believe a clarification notice should be sent out so all know when the report is to be published. Also, please let me know before you make a public release on the study so I can inform my management.
This caught a lot of us off guard.

Terry

From: Wingo, Erin <EWingo@nas.edu>
Sent: Wed Nov 09 10:10:56 2011
Subject: Project Update: NAS Cancer Risk Assessment

Dear interested parties,

The Cancer Risk Assessment project duration has been extended to May 2012.

Please continue to check the project [site](#) for further updates.

Please direct comments and questions to the project [email](#).

From: Kosti, Ourania
Sent: 2 Apr 2015 11:16:19 -0400
To: Brock, Terry
Subject: RE: Proposal

Yes, June 9. That sounds good!

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, April 02, 2015 11:15 AM
To: Kosti, Ourania
Subject: RE: Proposal

I think we should have something to say by then (June, right?)

. Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, April 02, 2015 11:09 AM
To: Brock, Terry
Subject: RE: Proposal

Absolutely, we should do that.

Do you anticipate there will be any public announcements from the NRC between now and then about the next study step (if any)?

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, April 02, 2015 11:01 AM
To: Kosti, Ourania
Subject: RE: Proposal

Have a great trip and tell Margot hi for me. How about a call when you get back so you can share your impressions of the meeting?

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, April 02, 2015 10:58 AM
To: Brock, Terry
Subject: RE: Proposal

Terry:

Thank you for the update. Good news on both issues (other than the fact that there is no Paris trip for you).

Best,

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, April 02, 2015 9:06 AM
To: Kosti, Ourania
Subject: RE: Proposal

Rania,

I put a hold on releasing the proposal without the attachments until we get the full version made non-publicly available. I'm meeting with my upper management today on the approval process to change the file designation from public to non-public. Unless there are issues, I expect by Tuesday it should be done.

I spoke to Brian Sheron about your trip to Paris to present at the regulator meeting. His only issue was that you don't commit NRC to anything. I told him you were really good and wouldn't. No Paris trip for me.

Terry

Terry Brock, Ph.D.

Office of Nuclear Regulatory Research

U.S. Nuclear Regulatory Commission

Washington D.C. 20555

Mail Stop CSB-3A07

phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]

Sent: Wednesday, April 01, 2015 10:41 AM

To: Brock, Terry

Subject: Proposal

Terry:

When will the NRC remove the link for the full proposal from Adams? Can you remove the link before you upload the truncated version of the proposal?

Thanks,

Rania

<http://pbadupws.nrc.gov/docs/ML1503/ML15035A143.pdf>

Ourania (Rania) Kosti, Ph.D.

Senior Program Officer

Nuclear and Radiation Studies Board

The National Academies

email: okosti@nas.edu

phone: 202 334 3066

From: Kosti, Ourania
Sent: 1 Apr 2011 13:30:06 -0400
To: Brock, Terry
Subject: RE: proposed tour agenda

Thanks –
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, April 01, 2011 1:08 PM
To: Kosti, Ourania
Cc: Crowley, Kevin
Subject: RE: proposed tour agenda

The dry cask storage probably unlikely for the spent fuel pool since it is in a radiation area and that usually requires a certain level of radiation protection training that we will not have time for.

I'll get back to you on the logistics once we get confirmation that Exelon will support the tour.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Friday, April 01, 2011 12:58 PM
To: Brock, Terry
Cc: Crowley, Kevin
Subject: RE: proposed tour agenda

Would it be possible for the committee to see the spent fuel pool and dry cask storage?

Since we are on the topic, I wanted to ask you about guidelines on:

- number of IDs we should bring with us
- suggestions on clothing
- what not to carry (e.g. big bags, cell phones, other)

Thank you again –
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, April 01, 2011 12:42 PM
To: Kosti, Ourania
Subject: RE: proposed tour agenda

The plant-walk down would be inside the plant in non-radiation areas.

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Friday, April 01, 2011 12:41 PM
To: Brock, Terry
Subject: RE: proposed tour agenda

Terry,

Thank you again for organizing this, we appreciate it. Do I understand correctly that we will not tour the inside of the plant? If possible, we would really want to see the inside of the plant.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]

Sent: Friday, April 01, 2011 11:30 AM

To: Kosti, Ourania; Crowley, Kevin

Subject: proposed tour agenda

Rania/Kevin,

We're waiting to hear back from Exelon, but it sounds favorable that we will be doing a tour at Byron or Dresden on 4/20—Braidwood is in an outage and no Exelon staff will be available.

Below is a proposed schedule for the committee tour that I've worked out with some of my colleagues. Are there any other items that you think the committee may want to see?

Terry

- 09:00 Arrive on-site and process visitors
- 09:15 – 9:30 Introduction, Facility Overview – Exelon
- 09:30 – 10:15 Discuss the off-site dose calculation manual and environmental and effluent monitoring programs – Exelon chemistry
- 10:15 – 11:30 Plant walk-down – Exelon
 - Radiation monitoring equipment for continuous and batch effluent releases
 - Turbine building and other Interesting non-radiation areas of the facility
- 11:30- – 12:15 On-site grounds tour of cooling towers, groundwater monitoring wells, area TLDs – Exelon
- 12:15 – 01:15 Working lunch on-site (NAS pays for committee box lunches)
 - NRC inspections of environmental monitoring and effluents program – NRC
- 01:15 – 03:00 Off-site tour of sampling locations for air, water, vegetation, and direct radiation (TLD stations)
- 03:00 – 03:15 Wrap-up

From: Kosti, Ourania
Sent: 17 Mar 2011 17:01:48 -0400
To: Brock, Terry
Subject: RE: question; map of background radiation

Thank you Terry, very good sources!
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, March 17, 2011 5:01 PM
To: Kosti, Ourania
Subject: RE: question; map of background radiation

Check your library for NCRP Report No. 160, *Ionizing Radiation Exposure of the Population of the United States* >> <http://www.ncrponline.org/Publications/160press.html> The report contains some maps and provides the basis for the 6.2 mSv / year (620 mrem per year value) now used for U.S. background dose.

Here's a link to EPA's radon maps <http://www.epa.gov/radon/zonemap.html>

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, March 17, 2011 4:50 PM
To: Brock, Terry
Subject: question; map of background radiation

Hello Terry,
Are you aware if there exists a map of the background radiation in the United States (or something equivalent to that)?
Thank you
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Crowley, Kevin
Sent: 15 Jul 2010 14:17:10 -0400
To: Brock, Terry
Cc: Greenleaf, Toni;Crowley, Kevin
Subject: Re: question and status

Terry:

We are in the final stages of processing the proposal. We are aiming to get it to you first thing next week.

BEIR VII is not a good precedent for the cancer risk study. We put the BEIR VII committee together shortly after FACA section 15 was enacted and we were still trying to figure out how to comply with the new requirements of that law. We now have several years of experience under our belts. I think that 3 months is reasonable to announce the provisional committee.

We can get a head start by initiating the nominations process before we receive funding from you to start the project. However, I want to be sure that your organization is comfortable with the proposal before we proceed.

I'll be in the office tomorrow and Monday if you want to talk.

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Thu Jul 15 13:59:50 2010
Subject: question and status

Hi Kevin,

I'm checking on the status of the proposal and had a question on committee member selection. How long did the BEIR-VII committee selection take and how many original selectees were replaced? My management questioned the 3- month expected time for committee selection and I wanted a little data from your experience to help inform the discussion.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania
Sent: 30 Aug 2011 13:15:27 -0400
To: Pelchat, John;Brock, Terry
Subject: RE: Question on dress RE: CAT III Meeting Presentations.

Dear John and Terry,

Attire: We are happy to follow your lead and go with business casual. (I am personally very pleased with your idea!)

Conference call: If you could please move the call to 3:30, then both Kevin Crowley (study director) and I can participate. If this is not possible, then I will join you at 3 pm. Let me know where we/l call in.

Slides: We can send the slides to you by the end of the day Tuesday September, 6.

Regards,

Rania

From: Pelchat, John [mailto:John.Pelchat@nrc.gov]
Sent: Tuesday, August 30, 2011 1:03 PM
To: Brock, Terry
Cc: Kosti, Ourania
Subject: RE: Question on dress RE: CAT III Meeting Presentations.
Importance: High

Stay tuned . . . we are suggesting . . . and have concurrence through the Deputy Regional Administrator that Region II staff will wear NRC logo shirts and appropriate pants (or skirt or kilt). We agree that we don't want to be "another group of suits from Washington."

However, the Regional Administrator has yet to bless the idea.

Obviously, Rania may wear whatever she chooses, though if we go "business casual", I would respectfully request that she follow our lead with the obvious exception of the logo item. Ask Rania, and let me know what she is thinking in that regard. If she prefers formal attire, we may likely follow suit (no pun intended).

Also . . . can you and Rania participate in a 3:00 pm call today to discuss the conduct and format of the meeting.

FINALLY – When might we expect a copy of the NAS slides to include into our presentation materials? Obviously we have no intent to edit the slides.

Thanks

John

From: Brock, Terry
Sent: Tuesday, August 30, 2011 10:26 AM

To: Pelchat, John
Subject: Question on dress RE: CAT III Meeting Presentations.

John,

What are you wearing at the meeting? I typically don't like to wear ties when I interact with the public, but was curious what's the cultural norm for NRC RII and the audience.

Thanks,
Terry

From: Pelchat, John
Sent: Tuesday, August 16, 2011 3:05 PM
To: Holahan, Vincent; Ramsey, Kevin; Park, James; Diaz-Toro, Diana
Cc: Vias, Steven; Brock, Terry
Subject: CAT III Meeting Presentations.

Vince, Kevin, James, Diana

- Attached is a set of Q's and A's regarding NFS that are based on actual questions from the public. I hope these might help you focus on what areas your presentation really needs to address.

James and Diana – I am providing this to both of you because I expect that you both will have significant roles in the preparation of your presentation.

NOTE: This is a DRAFT document. If you have a comment as you go through the Q's and A's, please share them with us. Kevin had already done so once; Thank you Kevin.

- Please submit a PowerPoint slide set and talking points (I'm not asking for a script) as soon as you can, but please no later than COB August 18, 2011.
- As discussed before, there will be an opportunity for you to answer questions informally with members of the public while other presentations are being made. Please provide me with anywhere from 1 – 4 PowerPoint slides that list your main points and we will have those printed as posters for you to use while talking to folks. Feel free to be creative and illustrate these posters in any way that will help you make your respective points.

Terry – please pass this along to the NAS. At some point we will ask for their slide set too, not to edit or comment on in any way but to load onto the computers that we will carry up for the meeting.

- Finally, I am trying to schedule a conference call sometime Tuesday August 16, so we can talk and align on ideas and approaches for the meeting.

If some or none of this make any sense to you, please call me and thank you in advance for helping us with this important public meeting.

John

John M. Pelchat
Senior Fuel Facility Inspector
U.S. Nuclear Regulatory Commission, Region II
245 Peachtree Center Avenue, NE, Suite 1200
Atlanta, Georgia 30303-1257

Telephone: 404-997-4729
800-577-8510, extension 2-4729
FAX: 404-997-4910
E-mail: john.pelchat@nrc.gov



Please consider the environment before printing this e-mail. Thank you.

From: Kosti, Ourania
Sent: 10 Nov 2011 12:03:20 -0500
To: Brock, Terry
Subject: RE: Question on report comments

Terry,
Sure, we can discuss when you are back.
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, November 10, 2011 10:40 AM
To: Kosti, Ourania
Subject: Re: Question on report comments

Rania,

We might then need to do a mod to the grant to have NAS disposition the comments. Let's chat on Monday when I get back from Paris.

Terry

From: Kosti, Ourania <OKosti@nas.edu>
To: Brock, Terry
Sent: Thu Nov 10 10:05:26 2011
Subject: RE: Question on report comments

Terry,

NAS staff will compile the public comments and give to the U.S.NRC. We will not be responding to individual comments other than acknowledging receipt. I hope this answers your question.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, November 10, 2011 9:48 AM
To: Kosti, Ourania
Subject: Question on report comments

Rania, I need some clarification on the processing of public comments. It is my understanding that NAS will collect and provide responses to the comments and then provide them as a separate document to NRC.

From: Kosti, Ourania <OKosti@nas.edu>
To: Brock, Terry
Sent: Wed Nov 09 12:53:45 2011
Subject: RE: Addendum: Cancer Risk Assessment release timeline

I am glad to hear that!
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, November 09, 2011 12:51 PM
To: Kosti, Ourania
Subject: Fw: Addendum: Cancer Risk Assessment release timeline

Thank you for the quick response. That should help around here.

Terry

From: Wingo, Erin <EWingo@nas.edu>
Sent: Wed Nov 09 11:25:27 2011
Subject: Addendum: Cancer Risk Assessment release timeline

Interested parties:

The U.S.NRC has requested that we provide more information regarding the release of the report within the extended Phase 1 contract. The extended timeline through May encompasses the time necessary to complete and disseminate the Phase 1 report. The report is scheduled to be released February 2012, after which there will be a 2 month public comment period through March and April.

From: Wingo, Erin
Sent: Wednesday, November 09, 2011 10:11 AM
Subject: Project Update: NAS Cancer Risk Assessment

Dear interested parties,

The Cancer Risk Assessment project duration has been extended to May 2012.

Please continue to check the project [site](#) for further updates.

Please direct comments and questions to the project [email](#).

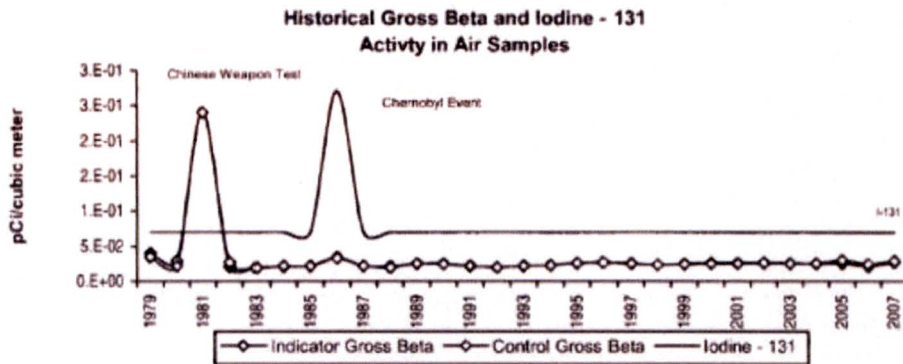


Figure 2 - Historical Gross Beta and Iodine-131 Activity in Air Samples; The similarity between indicator and control gross beta results demonstrates that the operation of Fermi 2 has had no adverse long-term trends in the environment. The lower limit of detection (LLD) for iodine-131 is 0.07 pCi/cubic meter.

Figure 3.12 Measurements of gross beta and iodine-131 activity in air samples at the Fermi Plant (located in Michigan) from 1979 to 2007. The measurements are sensitive enough to detect air emissions from Chinese nuclear weapons testing in the early 1980s and the Chernobyl accident in 1986. SOURCE: Fermi 2 REMP report (2007).

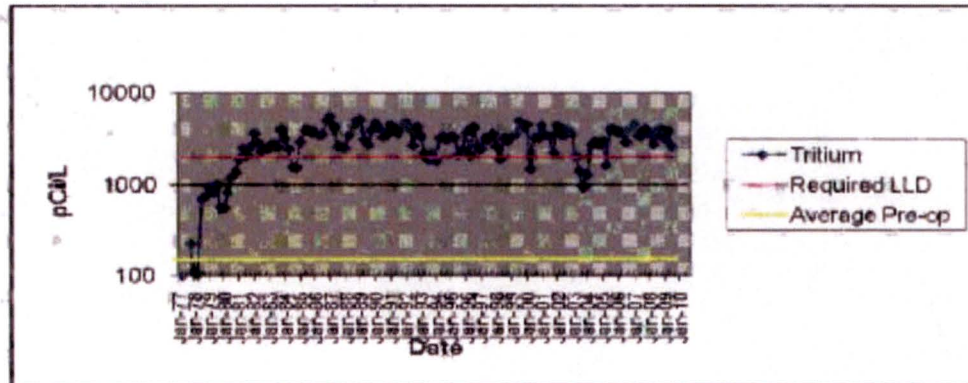


Figure 4.5 Tritium in Surface Water

Figure 3.13. Variations in tritium concentrations at a surface water monitoring station in the vicinity of the North Anna Plant from 1977 to 2010. SOURCE: North Anna REMP report (2009).

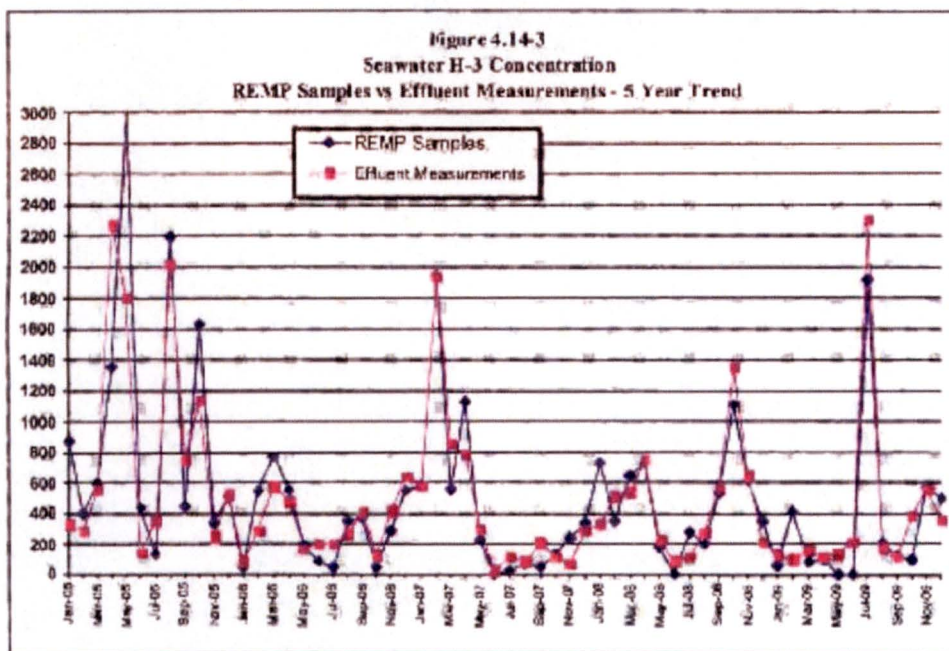


Figure 3.14. Five-year comparison between liquid effluent monitoring data and environmental monitoring data for tritium at location 32-1 at the Millstone Plant. SOURCE: From Licensee's 2009 report.

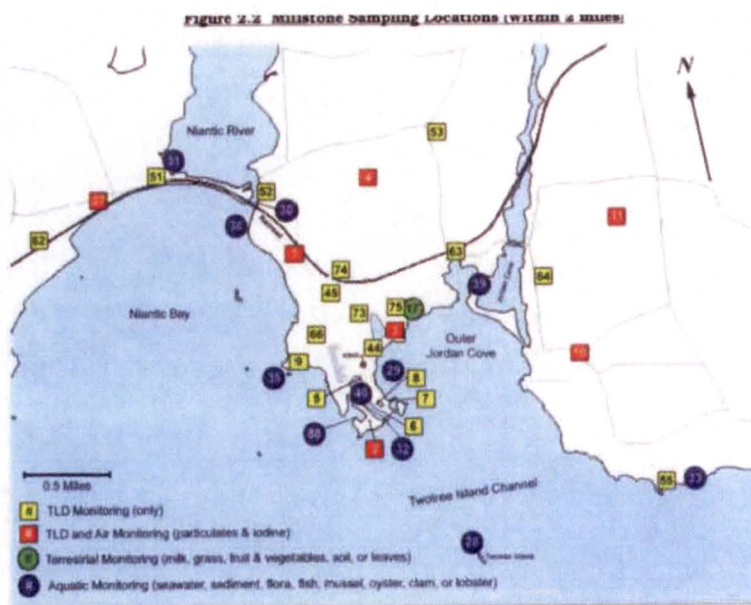


Figure 3.15 Environmental monitoring sites around Millstone Point Nuclear Power Station located in Connecticut. SOURCE: 2009 Millstone REMP report

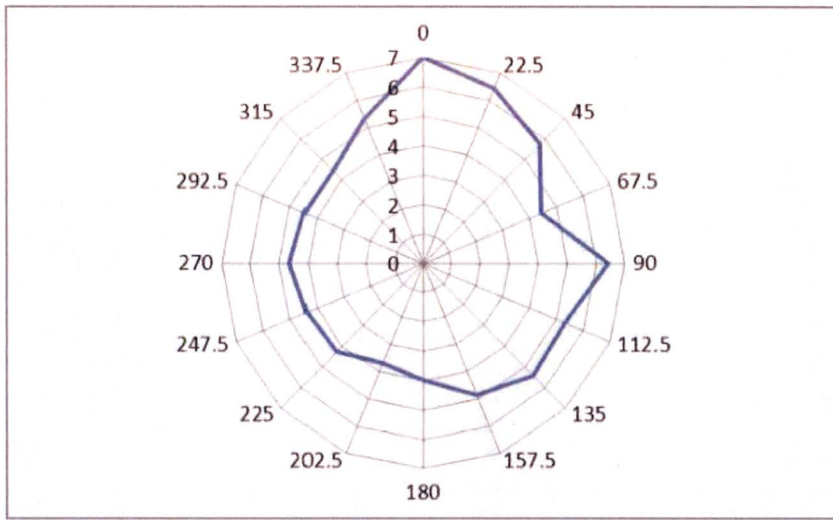


Figure 4.5 Annual wind rose for the Dresden plant for all stability classes and speeds combined. The rose shows the percent time (concentric lines) the wind was blowing in each compass direction (radial lines) at the height of the plant stack. SOURCE: Dresden 1975 Effluent release report for 1975 (February 1976).

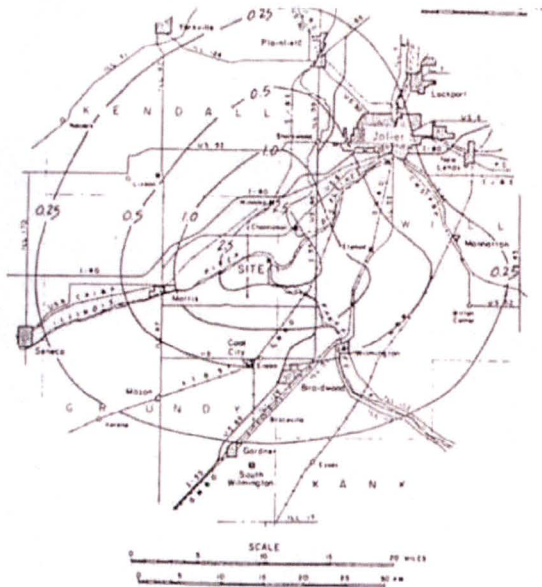


Figure 4.6 Calculated annual dose contours (rem) for 1975 at the Dresden plant from airborne effluent releases for comparison with the average wind rose (Figure 4.4). SOURCE: Dresden site effluent/environmental report for 1975 (February 1976).

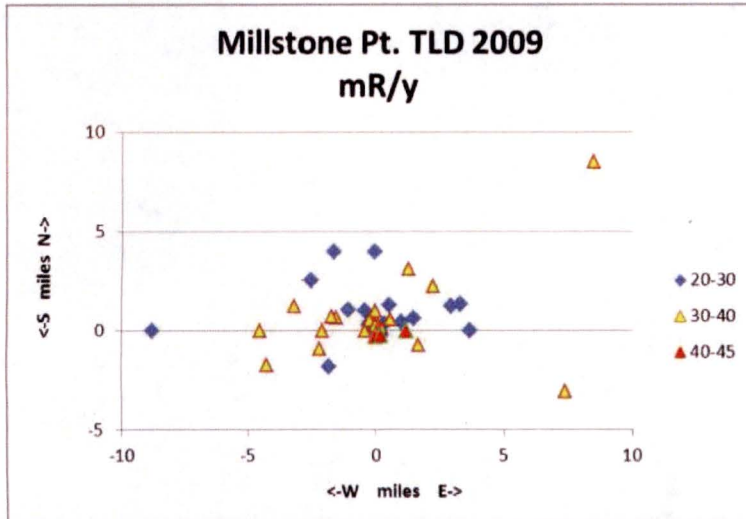


Figure 4.9 Variations in background radiation around the Millstone plant for 2009 based on TLD data. Note the relatively higher values near the fence line and variations with distance and direction. SOURCE: 2008 Millstone REMP report.

From: Kost, Ourania
Sent: 16 Jun 2011 17:20:51 -0400
To: Brock, Terry
Subject: RE: question regarding public involvement

Great thank you Terry for all topics you are working on. When we hear the OK from the plant, we will seek official approval to call the activity a non- committee activity that is not open to the public – same story as for Dresden since the same restrictions of maximum 10 individuals apply.

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, June 16, 2011 5:18 PM
To: Kost, Ourania
Cc: Wingo, Erin
Subject: RE: question regarding public involvement

Rania,
Let me see what I can find out about communicating with local stakeholders. I've told the San Onofre staff that they are invited to attend the open meeting. Hopefully we'll hear something tomorrow about the tour.

Also, we're working away on your document request. We've had to go to our microfiche library to find some of the older documents.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kost, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, June 16, 2011 3:46 PM
To: Brock, Terry
Cc: Wingo, Erin
Subject: question regarding public involvement

Terry,

We would like to reach to the populations that live around the nuclear facilities in California and possibly have health concerns related to living near these facilities. We were wondering if you could communicate with the appropriate officers of the plants to share the public announcement of our meeting with them (to be finalized) or give us advice as to how we can reach the local communities.

Another note: Please inform the people of San Onofre that are putting the plant tour together and their colleagues, that they are welcome to attend the open session of the meeting, July 21st at the Beckman Center.

Thank you –
Rania

Ourania (Rania) Kostis, Ph.D.
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Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 17 Jun 2011 15:41:39 -0400
To: Brock, Terry
Cc: Wingo, Erin
Subject: RE: question regarding public involvement

Terry,

This is very helpful, thank you. Did you see the project announcement from our side going out earlier today?

Have a good weekend.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, June 17, 2011 3:39 PM
To: Kosti, Ourania
Cc: Wingo, Erin
Subject: RE: question regarding public involvement

Rania,

The San Onofre VP making the decision on the tour was out again for most of the week so we hope to hear a decision early next week. I'll let you know when I hear something.

We know of two external stakeholders that you could contact that regularly express interest in issues related to San Onofre. Rochelle Becker, of the Alliance for Nuclear Responsibility, has been involved in several Diablo Canyon issues (I think she lives near there), but also has an interest in SONGS. Gary Headrick of San Clemente Green has been very involved in the NRC public meetings near SONGS and communicates frequently with the NRC Senior Resident, Greg Warnick.

Ms. Becker's email address from her group's website is: rochelle@a4nr.org

For Mr. Headrick, his group's website lists his email address as: gary@sanclementegreen.org.

We're checking with the Region IV office to see if they know of anyone else local that you can contact directly—I'll let you know if I get additional names.

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, June 16, 2011 3:46 PM
To: Brock, Terry
Cc: Wingo, Erin
Subject: question regarding public involvement

Terry,

We would like to reach to the populations that live around the nuclear facilities in California and possibly have health concerns related to living near these facilities. We were wondering if you could communicate with the appropriate officers of the plants to share the public announcement of our meeting with them (to be finalized) or give us advice as to how we can reach the local communities.

Another note: Please inform the people of San Onofre that are putting the plant tour together and their colleagues, that they are welcome to attend the open session of the meeting, July 21st at the Beckman Center.

Thank you –
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Brock, Terry
Sent: 15 Dec 2011 19:12:47 +0000
To: 'Kosti, Ourania'
Subject: RE: question regarding the National State Liaison Officers Conference
Attachments: SLOAnnualMeeting.pptx

Rania,

Attached are the slides Stephanie presented at the subject line meeting. Do you want one of us to contact the Director to try and clarify where his comments on population size were coming from?

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Thursday, December 15, 2011 1:35 PM
To: Brock, Terry
Subject: RE: question regarding the National State Liaison Officers Conference

Terry,
Any updated on this issue? Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, December 05, 2011 3:17 PM
To: Kosti, Ourania
Subject: RE: question regarding the National State Liaison Officers Conference

I spoke to Stephanie and she recalls the Director from Mississippi asked about conducting a cancer incidence study. Stephanie told him it was in part dependent on the quality and quantity of cancer incidence data at each state tumor registry. She's pretty certain she didn't talk about Grand Gulf specifically or population sizes. I'll get you the slides when she gets into town early next week.

Terry

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Monday, December 05, 2011 1:21 PM
To: Brock, Terry
Subject: RE: question regarding the National State Liaison Officers Conference

I agree with your comments. Thank you for asking Stephanie for the slides. The comment came to me as part of a letter response to our request for concerns around nuclear facilities. It was the last paragraph in that letter.

Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]

Sent: Monday, December 05, 2011 1:11 PM

To: Kosti, Ourania

Subject: RE: question regarding the National State Liaison Officers Conference

Stephanie gave the talk. She's out of the office, but I asked her for her slides and if she has any comment on what was relayed to you-- I've heard nothing about it. However, I would be surprised if she commented on specifics about any one facility or its population size. But we'll wait for her to get back to me.

Terry

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]

Sent: Monday, December 05, 2011 12:32 PM

To: Brock, Terry

Subject: question regarding the National State Liaison Officers Conference

Dear Terry,

Do you know who presented on the National Academy of Sciences' cancer-risk study at the National State Liaison Officers Conference and is the presentation available to download? I received a comment from the Director of Radiological Health/Mississippi State Department of Health who attended the conference saying that during the presentation it was implied that the population around the Grand Gulf Nuclear Station is not preferred to make a good study because of its size.

Thank you --

Rania

Ourania (Rania) Kosti, Ph.D.

Program Officer

Nuclear and Radiation Studies Board

The National Academies

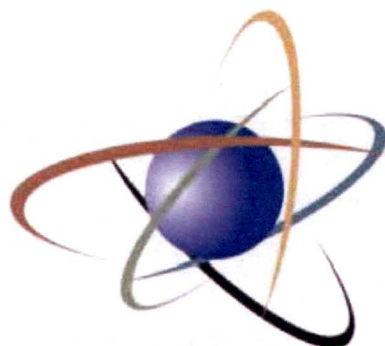
500 Fifth Street, NW

Washington, DC 20001

phone: 202 334 3066

fax: 202 334 3077

email: okosti@nas.edu



U.S. NRC

UNITED STATES NUCLEAR REGULATORY COMMISSION

Protecting People and the Environment



Analysis of Cancer Risks near Nuclear Facilities

2011 NATIONAL STATE LIAISON OFFICERS CONFERENCE

Stephanie Bush-Goddard, Ph.D.
Chief, Radiation Protection Branch
Office of Nuclear Regulatory Research
November, 2nd 2011

Purpose, Outcome, Process

- Purpose

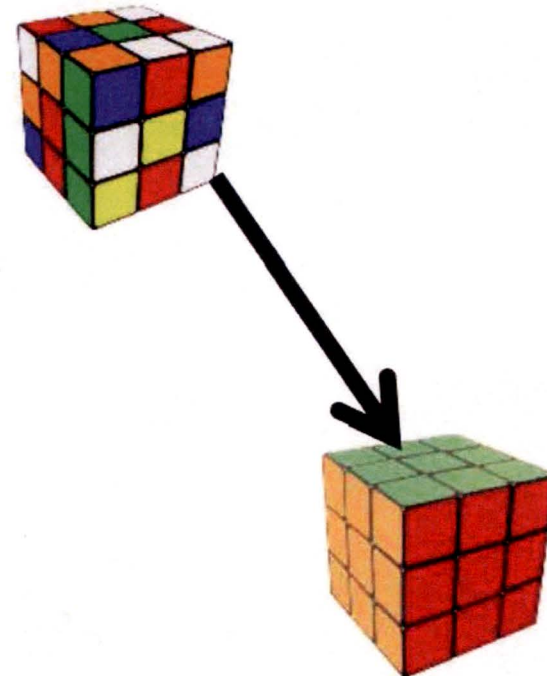
- Introduce to Some, Update Others on activities centered around the “Analysis of Cancer Risk in Populations Near Nuclear Facilities – Phase 1” Study

- Outcome

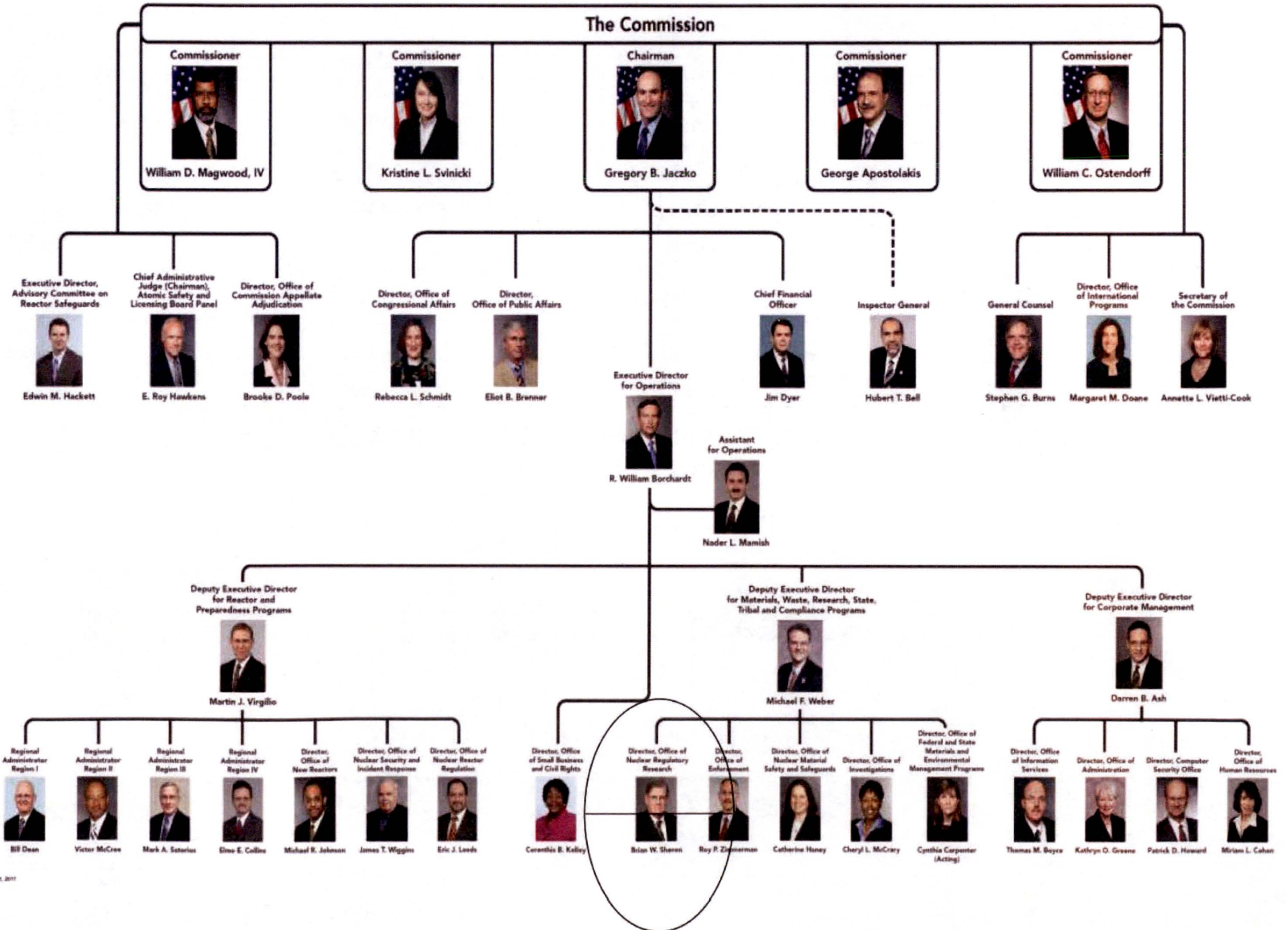
- Greater Awareness
- Contact for Questions

- Process

- ~ 25 min Slide Presentation
 - Who, What, Why, When and Where
- ~ 20 min question and answer



U.S. Nuclear Regulatory Commission



Last Updated: 10/5/2011



Brian Sheron
Director



Jennifer Uhle
Deputy Director

Division of Engineering



Michael Case
Division Director

Stuart Richards
Deputy Division Director

Division of Systems Analysis



Kathy Gibson
Division Director

Michael Scott
Deputy Division Director

Division of Risk Analysis



Richard Correl
Division Director

Douglas Coe
Deputy Division Director

Program Management, Policy Development & Analysis Staff



Mary Muesie
PMDA Director



Aladar Csontos
Component Integrity Branch



Mirela Gavrilas
Corrosion and Metallurgy Branch



Tom Boyce
Regulatory Guide Development Branch



Russell Sydnor
Digital Instrumentation and Control Branch



John Burke
Mechanical and Electrical Engineering Branch



Rosemary Hogan
Structural, Geotechnical and Seismic Engineering



Chris Hoxie
Reactor Systems Code Development Branch



Scott Elkins
Reactors Systems Analysis Branch



Stephanie Bush-Goddard
Radiation Protection Branch



Richard Lee
Fuel and Source Term Code Development Branch



Patricia Santiago
Accident Analysis Branch



Kevin Coyne
Probabilistic Risk Assessment Branch



Mark Salley
Fire Research Branch



Benjamin Beasley
Operating Experience and Generic Issues Branch



Gary DeMoss
Performance and Reliability Branch



Sean Peters
Human Factors and Reliability Branch



William Ott
Environmental Transport Branch



Leslie Donaldson
Human Capital & Communications Branch



Tom Kardaras
Information Technology & Infrastructure Branch



Teresa Grancorvitz
Financial & Performance Management Branch



Donna-Marie Sangimino
International Programs Team

Where it all started. Seascale, England



Sellafield Fuel Processing Plant,

Credible peer review reports of increase of childhood leukemia

U. S. Congress commissioned the National Cancer Institute to do similar
Health Study around NPPs



- In 1990, the **National Cancer Institute (NCI)** conducted a study of cancer mortality rates around 52 nuclear power facilities and 10 other nuclear facilities.
- The study covered the period from 1950 to 1984, and evaluated the **change in mortality rates** before and during facility operations.



National Cancer Institute (NCI)

- Looked at 16 different types of cancers
- Three Control Counties for each study county
- However:
 - Demographic changes in the last 20 years
 - Limited cancer incidence (occurrence or morbidity) information
 - Does not include facilities operated after 1982

What did the NCI study find?

- NCI conclusion for 1990 study:
 - Headline: No Excess Mortality Risk Found in Counties with Nuclear Facilities
 - Showed no general increased risk of death from cancer for people living in 107 U.S. counties containing or closely adjacent to 62 nuclear facilities.

Overall Relative Risks		
Disease	Before Startup	After Startup
Leukemia		
- Childhood	1.08	1.03
- All Ages	1.02	0.98

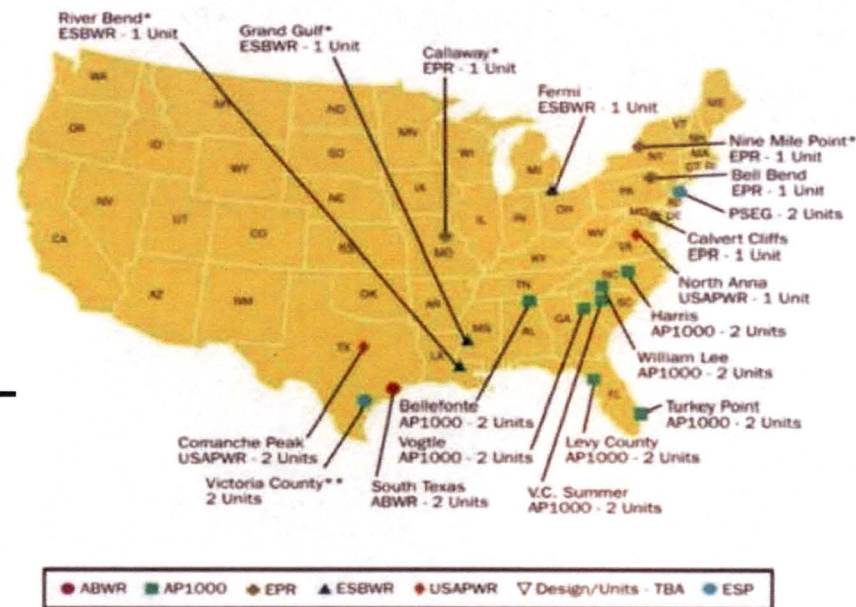
Jablon et al, *JAMA* 265:1403-1408, 1991

Time Pattern

Why is NRC sponsoring an update?

- Provide stakeholders with the **latest cancer epidemiology information**

- Develop an approach to assess cancer risk in **geographic areas smaller than the county level**



- Account for **off-site dose**

- Study **cancer incidence** (occurrence or morbidity)

Who's conducting the study?

- **The National Academy of Science**
 - Established in 1863 to address the government's need for an independent advisor on scientific matters



Grant with National Academies of Science

- Charge to NAS:
 - Ensure an open, credible, and objective study with opportunities for stakeholder input
 - Webcast public meetings
 - Hold meetings in different geographical regions
 - Provide opportunity for public comment on study recommendations for NRC consideration



Charge to NAS, cont:

- **Phase I**
 - Determine whether a technically defensible approach to meet the study design is feasible –
- and if so, develop **recommendations for Phase 2** using scientifically sound processes for evaluating whether nuclear facilities pose a cancer risk

Study Design

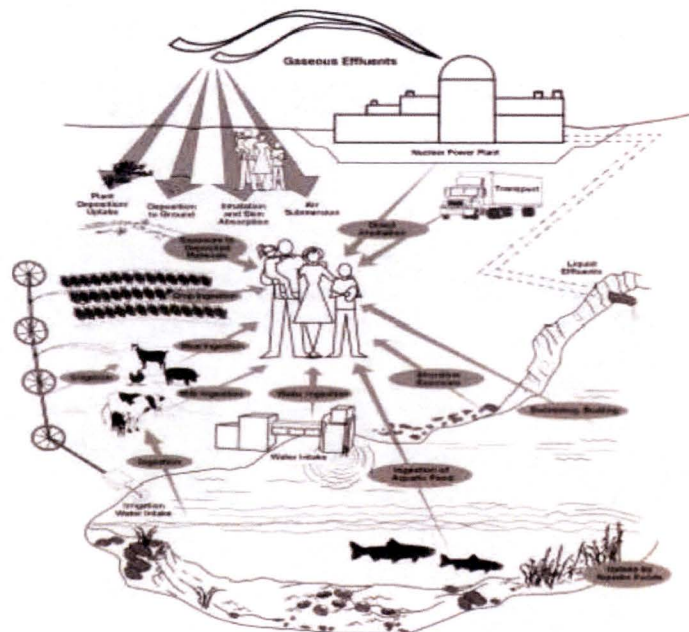
- Consider different epidemiological study designs and statistical assessment methods (e.g., ecologic, cohort, case-control)
- Cancer types and endpoints (i.e., incidence, mortality)
- Availability, completeness, and quality of cancer incidence and mortality data

Study Design

- Demographic characteristics of the study and control populations (e.g., all age groups, including children and nuclear facility workers)
- Geographic areas to use in the study (e.g., county, zip codes, census tracts)

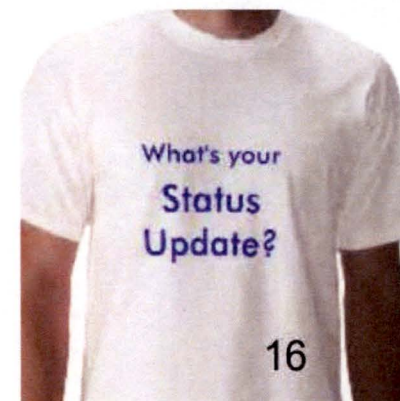
Study Design cont.

- Up front consideration of off-site radiation doses from facility operations to inform health study design



Status of Study

- PHASE I – Scoping Study (Recommendations)
 - September 2010 Grant awarded to NAS
 - February 2012 Phase I Report from NAS
 - April 2012 End of Comment Period
- PHASE II (Full Study)
 - Late 2012
- For the most current information on the study:
<http://dels.nas.edu/global/nrsb/CancerRisk>





Contacts:

- NRC Study Project Officer for NAS Grant
 - Terry Brock (301) 251-7487
 - Terry.Brock@nrc.gov

- Branch Chief
 - Stephanie Bush-Goddard (301) 251-7528
 - Stephanie.Bush-Goddard@nrc.gov

Questions?



From: Kosti, Ourania
Sent: 15 Dec 2011 16:34:01 -0500
To: Brock, Terry
Subject: RE: question regarding the National State Liaison Officers Conference

I will. Rania

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Thursday, December 15, 2011 4:24 PM
To: Kosti, Ourania
Subject: RE: question regarding the National State Liaison Officers Conference

Please let us know what he says.

Terry

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Thursday, December 15, 2011 2:30 PM
To: Brock, Terry
Subject: RE: question regarding the National State Liaison Officers Conference

Thank you Terry,
I will contact the Director myself. Hope all is well. Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Thursday, December 15, 2011 2:13 PM
To: Kosti, Ourania
Subject: RE: question regarding the National State Liaison Officers Conference

Rania,

Attached are the slides Stephanie presented at the subject line meeting. Do you want one of us to contact the Director to try and clarify where his comments on population size were coming from?

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Thursday, December 15, 2011 1:35 PM
To: Brock, Terry
Subject: RE: question regarding the National State Liaison Officers Conference

Terry,
Any updated on this issue? Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, December 05, 2011 3:17 PM

To: Kosti, Ourania
Subject: RE: question regarding the National State Liaison Officers Conference

I spoke to Stephanie and she recalls the Director from Mississippi asked about conducting a cancer incidence study. Stephanie told him it was in part dependent on the quality and quantity of cancer incidence data at each state tumor registry. She's pretty certain she didn't talk about Grand Gulf specifically or population sizes. I'll get you the slides when she gets into town early next week.

Terry

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Monday, December 05, 2011 1:21 PM
To: Brock, Terry
Subject: RE: question regarding the National State Liaison Officers Conference

I agree with your comments. Thank you for asking Stephanie for the slides. The comment came to me as part of a letter response to our request for concerns around nuclear facilities. It was the last paragraph in that letter.

Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, December 05, 2011 1:11 PM
To: Kosti, Ourania
Subject: RE: question regarding the National State Liaison Officers Conference

Stephanie gave the talk. She's out of the office, but I asked her for her slides and if she has any comment on what was relayed to you-- I've heard nothing about it. However, I would be surprised if she commented on specifics about any one facility or its population size. But we'll wait for her to get back to me.

Terry

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Monday, December 05, 2011 12:32 PM
To: Brock, Terry
Subject: question regarding the National State Liaison Officers Conference

Dear Terry,

Do you know who presented on the National Academy of Sciences' cancer-risk study at the National State Liaison Officers Conference and is the presentation available to download? I received a comment from the Director of Radiological Health/Mississippi State Department of Health who attended the conference saying that during the presentation it was implied that the population around the Grand Gulf Nuclear Station is not preferred to make a good study because of its size.

Thank you -

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077

email: okosti@nas.edu<<mailto:okosti@nas.edu>>

From: Kosti, Ourania
Sent: 14 Nov 2014 10:17:22 -0500
To: Brock, Terry
Subject: RE: question related to pilot execution

Thank you. Will you come to the NAS meeting Monday?

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, November 14, 2014 10:14 AM
To: Kosti, Ourania
Subject: RE: question related to pilot execution

Ok, let me do some more digging.

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Friday, November 14, 2014 10:10 AM
To: Brock, Terry
Subject: RE: question related to pilot execution

They are asking me to check with the sponsor. They will eventually require a formal letter from you stating the FOIA exemption that applies.

Do you have FOIA experts at NRC? I did get a response from the States but I wonder if the government may think a different exemption applies.

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, November 14, 2014 10:08 AM
To: Kosti, Ourania
Subject: RE: question related to pilot execution

I'm not sure. You might check with your institutions FOIA experts.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, November 13, 2014 1:53 PM
To: Brock, Terry
Cc: Kosti, Ourania
Subject: question related to pilot execution

Terry:

I have started working on the proposal for the Phase 2 pilot execution step. Do you know what is the FOIA exception that applies to making health information from cancer registries public? I thought you might have experience with that from the million workers study.

Thank you for your help.

Rania

Ourania (Rania) Kosti, Ph.D.
Senior Program Officer
Nuclear and Radiation Studies Board
The National Academies
email: okosti@nas.edu
phone: 202 334 3066

From: Kosti, Ourania
Sent: 25 Nov 2014 08:39:40 -0500
To: Brock, Terry
Subject: RE: question related to pilot execution

Thank you Terry. I appreciate it. Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, November 25, 2014 8:35 AM
To: Kosti, Ourania
Subject: RE: question related to pilot execution

I heard back from our FOIA person. The NRC does not collect any cancer registry/vital statistics data. However, we do collect personally identifiable information (PII) and that would be withheld under Exemption 6 of the FOIA.

Terry

Terry Brock, Ph.D.

Office of Nuclear Regulatory Research

U.S. Nuclear Regulatory Commission

Washington D.C. 20555

Mail Stop CSB-3A07

phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Monday, November 24, 2014 3:57 PM
To: Brock, Terry
Cc: Kosti, Ourania
Subject: RE: question related to pilot execution

Terry,

Any lack with this?

Rania

From: Kosti, Ourania
Sent: Thursday, November 13, 2014 1:53 PM
To: Terry Brock (Terry.Brock@nrc.gov)
Cc: Kosti, Ourania
Subject: question related to pilot execution

Terry:

I have started working on the proposal for the Phase 2 pilot execution step. Do you know what is the FOIA exception that applies to making health information from cancer registries public? I thought you might have experience with that from the million workers study.

Thank you for your help.

Rania

Ourania (Rania) Kosti, Ph.D.

Senior Program Officer

Nuclear and Radiation Studies Board

The National Academies

email: okosti@nas.edu

phone: 202 334 3066

From: Kosti, Ourania
Sent: 5 Feb 2015 08:33:14 -0500
To: Brock, Terry
Subject: RE: Question

Thanks.

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Tuesday, February 03, 2015 3:33 PM
To: Kosti, Ourania
Subject: RE: Question

I'll put it in Adams and provide you the ml #. It will be publicly available then.

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Tuesday, February 03, 2015 9:43 AM
To: Brock, Terry
Subject: Question

Hello Terry,

I understand from a conversation our media offices have (Jennifer Walsh and Scot Burnell) that you will make the proposal public through your "usual process." Can you please let me know what this process is? I want to make sure I understand your process if I receive requests for information.

Rania

Ourania (Rania) Kosti, Ph.D.
Senior Program Officer
Nuclear and Radiation Studies Board
The National Academies
email: okosti@nas.edu
phone: 202 334 3066

From: Kosti, Ourania
Sent: 3 Mar 2011 12:01:10 -0500
To: Brock, Terry
Subject: RE: quick note

Thank you -
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, March 03, 2011 11:58 AM
To: Kosti, Ourania
Subject: RE: quick note

Later in the day is fine because I'll be at NCRP and I can head down whenever. We need to address this issue as soon as we can. Even after our call this morning I'm still receiving unfavorable feedback from others in the agency about this issue. Let me know when his schedule is confirmed.

Thanks,
Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, March 03, 2011 11:54 AM
To: Brock, Terry
Subject: quick note

Terry,
It seems that Kevin is interviewing the person at 1:30pm Monday and will most likely be done 3/3:30. Would that work for you to come or should we look for alternative days for the biomarker discussion? I should note that I have not confirmed with Kevin that that time works for him for sure (due to the time difference with Japan), but to be a step ahead I wanted to check your availability first.
Thank you!
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 31 Aug 2011 12:56:42 -0400
To: Brock, Terry
Subject: RE: quick note

Two ways I would say:

- The U.S.NRC person that introduces us can make the point that we were invited to present to the meeting that they host and
- We have a couple of slides (as we commonly do in presentations) that show the independence of our organization and of the processes we follow for collecting information, report writing, review and release.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, August 31, 2011 12:53 PM
To: Kosti, Ourania
Subject: RE: quick note

What did you come up with?

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, August 31, 2011 12:25 PM
To: Brock, Terry
Subject: quick note

Dear Terry,

This is a quick note to say that earlier today we had a 30 min phone call conversation with John Pelchat and colleagues from the Atlanta headquarters to discuss the meeting next week. The main focus was identifying means to demonstrate the independence of our institution from the study sponsor.

Regards,

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 7 Oct 2011 14:13:49 -0400
To: Brock, Terry
Subject: RE: quick note

Cheers. Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, October 07, 2011 2:12 PM
To: Kosti, Ourania
Subject: RE: quick note

Here you go.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Friday, October 07, 2011 2:02 PM
To: Brock, Terry
Subject: quick note

Your presentation for meeting #5 is a pdf so I cannot change the date (or I can but should not). Please send me the edited version.

Scott's presentation does not have a date on the slide so I keep it as it is.

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 2 Feb 2012 15:47:35 -0500
To: Brock, Terry
Subject: RE: quick question

Thank you. You are faster than google!

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Thursday, February 02, 2012 3:45 PM
To: Kosti, Ourania
Subject: RE: quick question

No. It was congressionally mandated. John Boice would have the specifics.

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Thursday, February 02, 2012 3:42 PM
To: Brock, Terry
Subject: quick question

Terry,
Was the 1990 NCI study sponsored by the USNRC?
Thank you -
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 26 Jan 2011 13:44:13 -0500
To: Brock, Terry
Cc: Crowley, Kevin
Subject: RE: regarding OMB clearance

I agree, we will start looking into OMB clearance and potential IRB issues as the phase I progresses and we start looking into phase 2.

Thank you,
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, January 26, 2011 1:40 PM
To: Kosti, Ourania
Cc: Crowley, Kevin
Subject: RE: regarding OMB clearance

Thanks for the feedback. I don't think an OMB clearance will be needed for Phase 1, but as you've probably already concluded an OMB clearance would be needed if in Phase 2 we need to collect cancer incidence data from the > 35 states that contain nuclear power plants and certain fuel cycle facilities. In our experience an OMB clearance can take about 9 months to obtain—a potential consideration for the phase 2 planning as we get closer to the end of Phase 1.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, January 26, 2011 1:11 PM
To: Brock, Terry
Cc: Crowley, Kevin
Subject: RE: regarding OMB clearance

Dear Terry,
We have investigated the issue and we confirm that our institution is subject to OMB approval. Please, let me know if you have any further questions at this point.
Thank you,
Rania

From: Kosti, Ourania
Sent: Tuesday, January 25, 2011 3:18 PM
To: 'Brock, Terry'
Cc: Crowley, Kevin
Subject: regarding OMB clearance

Dear Terry,
Kevin Crowley has received your message regarding the OMB clearance issue that you raised. Although we think that we also do not need to have clearance for up to 9 customer surveys, we are looking into the matter and will come back to you shortly with the answer.

Regards,

From: Kosti, Ourania
Sent: 10 Feb 2012 14:32:16 -0500
To: Brock, Terry
Subject: RE: report release

Correct, it is still on.

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Friday, February 10, 2012 2:31 PM
To: Kosti, Ourania
Subject: RE: report release

Does this mean the briefing to NRC on Monday, March 12th is still on?

Terry

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Friday, February 10, 2012 1:58 PM
To: Brock, Terry
Subject: report release

Dear Terry,
This is a quick message to let you know that we are planning to release the Cancer Risk Study Phase I report to the public Wednesday, March 14.
Thank you -
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 11 Apr 2011 09:29:23 -0400
To: Brock, Terry
Subject: RE: REQUEST: Bridge-line for additional NRC expertise

Will do that. We may add a 5 minute Q and A immediately after every session also.
Rania

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, April 11, 2011 9:28 AM
To: Kosti, Ourania
Subject: RE: REQUEST: Bridge-line for additional NRC expertise

Rania,

We would like a bridge-line during the plenary session too. There's a question and answer session at 10:30.

Thanks,
Terry

-----Original Message-----

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Tuesday, April 05, 2011 11:51 AM
To: Brock, Terry
Subject: RE: REQUEST: Bridge-line for additional NRC expertise

There should not be any technical questions in the plenary session, if there are, we will ask the committee members to address those in the working group sessions. If still you think you would like your colleague to call in and participate that way, we will accommodate that. Let me know what you think. I will forward you the bridge-line info when established -

Rania

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Tuesday, April 05, 2011 11:44 AM
To: Kosti, Ourania
Subject: RE: REQUEST: Bridge-line for additional NRC expertise

No, that's ok I'll let him know. Please forward the bridge-line information once established.

What about the phone-line for the morning NRC presentation? Unfortunately he was unable to travel with us, but is considered part of our team and I would like to have him as a resource if we get asked a question after the presentation that Steve or I can't answer.

Thanks,
Terry

-----Original Message-----

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Tuesday, April 05, 2011 11:28 AM
To: Brock, Terry

Subject: RE: REQUEST: Bridge-line for additional NRC expertise

Thank you Terry. We would like Richard Conatser to participate in the dosimetry working group discussions (1-5 pm) Monday 18th. Shall I contact him and ask him if he is available that time or will you do that?

Thank you for your suggestion -

Rania

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Tuesday, April 05, 2011 7:19 AM
To: Kosti, Ourania; Crowley, Kevin
Subject: RE: REQUEST: Bridge-line for additional NRC expertise

Thanks. Richard would be available as a resource to help Steve and I answer questions. He doesn't have any prepared material.

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Tuesday, April 05, 2011 7:01 AM
To: Brock, Terry; Crowley, Kevin
Subject: Re: REQUEST: Bridge-line for additional NRC expertise

Terry,

Thank you. I will discuss with Kevin and the Chair.

Rania

----- Original Message -----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Tuesday, April 05, 2011 06:55 AM
To: Kosti, Ourania
Subject: REQUEST: Bridge-line for additional NRC expertise

Rania,

Please arrange for a bridge-line for an additional NRC dosimetry and environmental monitoring expert to call-in to the meeting during the NRC's morning presentation and during the afternoon dosimetry working group session. His name is Richard Conatser and the committee would profit from his input.

Thanks,
Terry

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Monday, April 04, 2011 4:20 PM
To: Brock, Terry
Cc: Crowley, Kevin
Subject: tour

Terry,

The list of committee members interested in the tour has grown. We now have 9 committee members (+Margaret Karagas) and 4 staff. Is there any way more than 10 people can tour the plant or should we let the committee know that there is no flexibility? Thank you -

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 5 Apr 2011 07:01:20 -0400
To: Brock, Terry;Crowley, Kevin
Subject: Re: REQUEST: Bridge-line for additional NRC expertise

Terry,

Thank you. I will discuss with Kevin and the Chair.

Rania

----- Original Message -----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Tuesday, April 05, 2011 06:55 AM
To: Kosti, Ourania
Subject: REQUEST: Bridge-line for additional NRC expertise

Rania,

Please arrange for a bridge-line for an additional NRC dosimetry and environmental monitoring expert to call-in to the meeting during the NRC's morning presentation and during the afternoon dosimetry working group session. His name is Richard Conatser and the committee would profit from his input.

Thanks,
Terry

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Monday, April 04, 2011 4:20 PM
To: Brock, Terry
Cc: Crowley, Kevin
Subject: tour

Terry,

The list of committee members interested in the tour has grown. We now have 9 committee members (+Margaret Karagas) and 4 staff. Is there any way more than 10 people can tour the plant or should we let the committee know that there is no flexibility? Thank you -

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Greenleaf, Toni
Sent: 6 Feb 2014 10:56:56 -0500
To: Brock, Terry;Kosti, Ourania
Subject: RE: REQUEST for Financial Report Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Terry, I will ask them to do that from now on. Toni

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, February 06, 2014 10:39 AM
To: Greenleaf, Toni; Kosti, Ourania
Cc: Denning, Doug
Subject: RE: REQUEST for Financial Report Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Toni/Rania

Please have your financial people include me on CC when they submit the financial information for the grant. This was done for Phase 1.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Greenleaf, Toni [mailto:TGreenle@nas.edu]
Sent: Wednesday, February 05, 2014 9:52 AM
To: Brock, Terry
Subject: RE: REQUEST for Financial Report Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Terry, it is sent to grants.FFR@nrc.gov.

Toni Greenleaf
Nuclear and Radiation Studies Board
202 334 3066

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, February 05, 2014 9:50 AM
To: Greenleaf, Toni
Subject: RE: REQUEST for Financial Report Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Hi Toni,

I looked through my e-mails and could not find it. Could you please have your financial people send it and include me on future reports. I have to track the financials in my office too.

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Greenleaf, Toni [<mailto:TGreenle@nas.edu>]
Sent: Wednesday, February 05, 2014 9:40 AM
To: Brock, Terry
Cc: Kosti, Ourania
Subject: REQUEST for Financial Report Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Terry, according to our accounting department the Federal Financial Report was sent to NRC on January 30th. Toni

Toni Greenleaf
Nuclear and Radiation Studies Board
202 334 3066

From: Greenleaf, Toni
Sent: Monday, February 03, 2014 2:45 PM
To: 'Brock, Terry'; Kosti, Ourania
Subject: RE: REQUEST for Financial Report RE: Technical Report: Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Terry, that comes from our accounting office. I will check with them to see when it went out. Toni

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, February 03, 2014 2:42 PM
To: Kosti, Ourania; Greenleaf, Toni
Subject: REQUEST for Financial Report RE: Technical Report: Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Hi Rania and Toni,

I'm looking for the quarterly financial report for the Cancer Risk Pilot Planning Project and can't seem to find it. Did it get sent out? If so, please resend.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research

U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Friday, January 03, 2014 3:17 PM
To: Brock, Terry
Cc: Carr, M'Lita; Greenleaf, Toni; Kosti, Ourania
Subject: Technical Report: Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Terry:
Happy New Year!
Please find attached the second quarterly programmatic update for the Cancer Risk Pilot Planning study sponsored by the U.S.NRC.
Do not hesitate to contact me if you have any questions.
Kind regards,
Rania

Ourania (Rania) Kosti, Ph.D.
Senior Program Officer
Nuclear and Radiation Studies Board
The National Academies
email: okosti@nas.edu
phone: 202 334 3066



From: Brock, Terry
Sent: 14 Jun 2011 14:07:21 +0000
To: 'Kosti, Ourania'
Subject: RE: request for NRC reports on NPPs

Let me check.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Monday, June 13, 2011 12:35 PM
To: Brock, Terry
Subject: RE: request for NRC reports on NPPs

Thank you.

Also, do you have any idea where we can find information such as years of operation for the fuel cycle facility sites?

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, June 13, 2011 9:52 AM
To: Kosti, Ourania
Subject: RE: request for NRC reports on NPPs

I'll see what we can find.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Friday, June 10, 2011 12:35 PM
To: Brock, Terry
Subject: request for NRC reports on NPPs

Terry,

Our dosimetry experts would appreciate it if you could send me - preferably in pdf format- the following reports. I understand that they were unable to find the reports online.

NUREG/CR-1497 (BNL-NUREG-51192), march 1981, "Radioactive Materials Released from Nuclear Power Plants, 1978"

NUREG-0521.

**NUREG-CR-2907 (BNL-NUREG-51581), Radioactive Materials Released from Nuclear Power Plants, (Vol. 1, 5,,6 in particular-Was able to download volumes 2,3,11,14)
(These reports also claim that all the detailed release data from 1978-1990 were stored in a database in digital form).**

NUREG-/CR-2850 (PNL-4221). Dose Commitments Due to Radioactive Releases from Nuclear Power Plant Sites" , (Volumes 1, 4 ,8 in particular-was able to download vol. 13 and 14)

They only requested the volumes indicated but it would be helpful if you gave us an idea as to whether the entire set is available.

In addition, they would like copies of the annual effluent release and environmental reports for the following NPP for the years indicated below. Only reports for recent years are available on the NRC web site.

Millstone, 1975
Dresden, 1975
Oyster Creek, 1979
Browns Ferry, 1984
Nine Mile Point, 1975
Zion, 1984
McGuire, 1984
Oconee, 1977
Peach Bottom, 1979
North Anna, 1984
Quad Cities, 1980
Pilgrim, 1977

Thank you for helping them with this request.

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 29 Apr 2011 10:14:10 -0400
To: Brock, Terry
Cc: Whetstone, Shauntee;Crowley, Kevin
Subject: RE: REQUEST improved telecon for Atlanta meeting

Hello Terry,

I am sorry to hear that Richard had a difficult time to actively participate because of the teleconference set up in Chicago. I will discuss with our team and find a solution to this problem for the upcoming meeting in Atlanta. Thank you for sharing it with me.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, April 29, 2011 10:07 AM
To: Kosti, Ourania
Subject: REQUEST improved telecon for Atlanta meeting

Hi Rania,

For the Atlanta meeting we will probably have additional fuel cycle experts calling in to the meeting to answer questions. In Chicago, Richard Conatser told me he had a difficult time hearing the questions from the committee making it very difficult for him to actively participate. I've been to many meetings where people call in and there are multiple microphones connected to the teleconference phone and it seems to work ok. Would you please make sure the next venue has adequate teleconferencing capabilities.

Thanks,
Terry

From: Kosti, Ourania
Sent: 10 May 2011 07:39:20 -0400
To: Shaffer, Vered
Cc: Brock, Terry; Bush-Goddard, Stephanie
Subject: Re: request

I will surely do that! Hope to see you in Atlanta-

Rania

From: Shaffer, Vered [mailto:Vered.Shaffer@nrc.gov]
Sent: Tuesday, May 10, 2011 07:20 AM
To: Kosti, Ourania
Cc: Brock, Terry <Terry.Brock@nrc.gov>; Bush-Goddard, Stephanie <Stephanie.Bush-Goddard@nrc.gov>
Subject: request

Good morning Rania,

I hope all is well with you.

In order to better help project communications, I would like to kindly ask you to please have me on CC on all emails regarding the cancer study project.

Thank you and have a wonderful day!

Vered

From: Kosti, Ourania
Sent: 14 Feb 2012 15:26:46 -0500
To: Brock, Terry
Subject: RE: response to your requests

I am pleased with your response. Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, February 14, 2012 3:26 PM
To: Kosti, Ourania
Subject: RE: response to your requests

Rania, I think this workable. Thanks.
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, February 14, 2012 3:23 PM
To: Brock, Terry
Subject: RE: response to your requests

Hello Terry,
My answers below. I apologize if we sound difficult. As I said, at this point we will concentrate on the review process (We have received 8 out of 14 comments.)
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, February 14, 2012 11:49 AM
To: Kosti, Ourania
Subject: RE: response to your requests

See below

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, February 14, 2012 9:44 AM

To: Brock, Terry
Subject: RE: response to your requests

Terry,

About 1: The presentation to you and your colleagues is going to be more detailed compared to the presentation John presents at RIC. I do not have a very clear picture of the presentation content or when it will be ready at this point as we are putting our efforts on responding to the reviewers' comments.

>> We'll probably forward your briefing slides to the Commission and tell them what is being presented at the RIC will be less detailed. Maybe we can get the RIC slides by Tuesday or Wednesday and transmit to the Commission what is actually going to be presented by John.

RK: Sure, you can forward the slides internally. We will aim to send you the slides a day or two before John's presentation.

About 2: I am concerned that it will be Monday AM that we will be printing your copy of the report that we will deliver to you the time of the briefing.

>> Understand the tightness of the timeline. How about you share your slides once they are done so I can read them before the brief? Also, please provide a pdf version of the report with the hard copy to help with transmittal inside NRC. Ok?

RK: Depending on the tightness of the schedule we could do that. We will provide a pdf version of the report together with the hard copy.

Terry

Thank you –

Rania

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Tuesday, February 14, 2012 9:34 AM
To: Kosti, Ourania
Subject: RE: response to your requests

Rania,
See below.
Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Tuesday, February 14, 2012 9:26 AM
To: Brock, Terry
Subject: response to your requests

Dear Terry,

I talked to Kevin this morning about the two things we discussed on the phone:

1. Providing you with the slides for the RIC presentation.

Given the very tight schedule we are working on, it is unlikely the presentation will be ready by Monday, March 12.

How different are the RIC slides going to be from your NRC briefing slides? It seems you would have mostly the same content. The Commission is going to want to see the slides with enough time before the public RIC presentation. Is Tuesday doable?

2. Giving you the opportunity to go through the report before the scheduled Monday briefing. We are unable to do that before there is a signoff from all committee members which we expect to have by the end of the day Friday 9th or even during the weekend.

Ok, How about I come down early Monday morning to look through the document?

My understanding is that you will be delivering the report to NRC on Monday at the brief and at that time we will need a pdf so we can transmit the report to the Commission.

Thank you –

Rania

Ourania (Rania) Kostis, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okostis@nas.edu

From: Brock, Terry
Sent: 15 Mar 2011 14:07:30 +0000
To: 'Kosti, Ourania'
Subject: RE: revised statement of task

That's correct. See you at 12:50.

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, March 15, 2011 10:04 AM
To: Brock, Terry
Subject: RE: revised statement of task

Terry,
Sure, we will discuss more tomorrow. Let me make sure I know where we are meeting; we take the red line to White Flint and walk towards the Toys are Us. The building is located at 6003 Executive Boulevard. Correct? We will aim to be there 12:50 to allow time to go through security.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, March 15, 2011 9:19 AM
To: Kosti, Ourania
Cc: Crowley, Kevin
Subject: RE: revised statement of task

Rania/Kevin,

Let's discuss tomorrow. I would like to know more about the reasoning in adding the uncertainty items.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Monday, March 14, 2011 5:13 PM
To: Brock, Terry
Cc: Crowley, Kevin
Subject: revised statement of task

Dear Terry,

Attached is the revised statement of task. Please share and discuss with your management but do not circulate further as it has not been submitted to NAS for approval yet. We would like to hear any

comments you may have. Please, let us know if you need any clarifications regarding the edits. Upon approval from U.S.NRC we will seek approval from NAS.

Thank you,

Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Crowley, Kevin
Sent: 22 Nov 2010 14:45:41 -0500
To: Brock, Terry
Subject: RE: RIC 2011 Speaker Invitation (Analysis of Cancer Risk in Populations Living near Nuclear Facilities)
Attachments: Speaker Panelist Confirmation Packet for RIC 2011 CancerStudy.doc

I can see that I am past the invitation response deadline. My response is attached.

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, November 22, 2010 1:29 PM
To: Crowley, Kevin
Subject: RIC 2011 Speaker Invitation (Analysis of Cancer Risk in Populations Living near Nuclear Facilities)

Hi Kevin,

We've been getting the attached RIC invitation e-mails bounced back from the NAS server.

Let me know if you get this.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

Subject: RIC 2011 Speaker Invitation (Analysis of Cancer Risk in Populations Living near Nuclear Facilities)

11/10/2010

[Kevin Crowley, Ph.D., Sr. Board Director, Nuclear and Radiation Studies Board, National Academy of Science]

Dear Dr. Kevin Crowley:

It is my sincere pleasure to invite you to speak at NRC's 23rd annual United States Nuclear Regulatory Information Conference (RIC). The Conference will be held on March 8-10, 2011, at the Bethesda North Marriott Hotel and Conference Center, 5701 Marinelli Road, North Bethesda, MD 20852. Every year, the RIC brings together over 3,000 CEOs and presidents of nuclear industry licensees, vendors insurers, law

firms, consultants, nuclear industry associations and regulators from around the world to address mutual challenges and share information.

Specific session details are provided below:

Session Title and Abstract: Analysis of Cancer Risk in Populations Living near Nuclear Facilities

Session Goals and Learning Objectives: The Nuclear Regulatory Commission has requested the National Academy of Sciences (NAS) to update the 1990 U.S. National Institutes of Health - National Cancer Institute (NCI) report, "Cancer in Populations Living Near Nuclear Facilities." The staff uses the NCI report as a primary resource when communicating with the public about cancer mortality risk in counties that contain or are adjacent to nuclear power facilities. In the new study, the NRC is also interested in having the NAS evaluate cancer diagnosis rates, as well as exploring how to divide the study areas around the facilities into geographical units smaller than the counties used in the NCI report. This session will provide a historical context of NRC's request to NAS with an introduction of the study committee and study schedule. In addition, speakers from various perspectives will present their views on the study.

Other Potential Speakers/Panelists:

- Dr. Terry Brock, Sr. Project Manager, Health Effects Branch, Office of Nuclear Regulatory Research, NRC

- Dr. Edward F. Maher, President, Health Physics Society

- Dr. Thomas B. Cochran, Senior Scientist, Natural Resources Defense Council

- Mr. Ralph Andersen, Senior Director, Radiation Safety and Environmental Protection, Nuclear Energy Institute

Session Coordinator:

Vered Anzenberg, Ph.D
Nuclear Engineer, Health Effects Branch
Mailstop: CSB 03A07M
Washington, DC 20555
(O) 301-251-7546; (F) 301-251-7416
Vered.Anzenberg@nrc.gov

Please find enclosed with this letter a confirmation packet and tentative program overview. The purpose of the confirmation packet is to obtain your permission to use your name, photographs, presentation, etc, in NRC's RIC printed materials and on the RIC website. The confirmation form is written so that you are aware that it is your responsibility to inform the Session Coordinator if you prefer your information not be posted prior to the conference. Upon acceptance of this invitation, please complete and return the enclosed "Confirmation Packet" including a completed confirmation form, a signed acceptance form and biographical information by **November 19, 2010** to ensure inclusion in the final printed program. This can be returned to the **Session Coordinator**, (contact information above) by mail, fax, or email. Also, please include a title for your presentation. If you are unavailable to be a speaker/panelist for this session, please notify me as soon as possible.

Also enclosed is a tentative program overview, for your information. The highlighted fields indicate possible times for this session. However, at this time the exact date and time has not been determined.

I look forward to working with you to help this session be a success. If you have any questions or need further assistance, please feel free to contact me.

Sincerely,
Kathy Gibson
Deputy Division Director, Division of Systems Analysis

Enclosures:

1. Speaker/Panelist Confirmation Packet
(confirmation form/acceptance form/bio form)
2. Tentative Program Overview



SPEAKER/PANELIST CONFIRMATION PACKET
(Confirmation, Acceptance, and Bio)

SPEAKER/PANELIST CONFIRMATION FORM

Please complete the information below and return by: **November 19, 2010**

Session Information (to be completed by Session Chair):

Session Title: Analysis of Cancer Risk in Populations Living near Nuclear Facilities

Session Chair: Kathy H. Gibson, Deputy Division Director, Division of Systems Analysis
Office of Nuclear Regulatory Research, NRC
Kathy.Gibson@nrc.gov
(301)-251-7499

Session Coordinator: Vered Anzenberg, Ph.D
Nuclear Engineer, Health Effects Branch
Mailstop: CSB 03A07M
Washington, DC 20555
(O) 301-251-7546; (F) 301-251-7416
Vered.Anzenberg@nrc.gov

Speaker Confirmation Information (to be completed by speaker):

PLEASE PRINT and ensure that the information provided is legible and accurate. The information you provide below will be used to populate the online and formal conference program.

FULL NAME (as shown in printed program): Kevin D. Crowley

FULL POSITION TITLE: Director, Nuclear and Radiation Studies Board

FULL ORGANIZATION NAME (no abbreviations, please): National Research Council of the National Academies

CONTACT INFORMATION:

BUSINESS MAILING ADDRESS: 500 Fifth Street, NW, Washington, DC 20001

BUSINESS TELEPHONE NUMBER: 202-334-3066

BUSINESS E-MAIL ADDRESS: kcrowley@ns.edu

PRESENTATION TITLE: NAS Study on Cancer Risks in Populations Living near Nuclear Facilities

IMPORTANT NOTE: Speaker(s)/Panelist(s) are reminded to pre-register for the conference. Registration opens in early January 2011.

For Internal NRR Use Only:	Confirmation #: _____
Date Received: _____	Date Entered: _____
	Date Submitted: _____

SPEAKER/PANELIST ACCEPTANCE AGREEMENT

Information contained in the printed materials and on the website for the Regulatory Information Conference (RIC) is made available to the general public in advance of the conference. **In order for your information to be included in the conference printed program and on the RIC website, please sign the required release below and return by November 19, 2010.**

By accepting the invitation to be a speaker at the RIC, I grant the NRC permission to:

- Photograph, videotape, audiotape and post my presentation slides on the public website (Internet); and
- Use the aforementioned images in educational and information activities without compensation.

Important Note: If you accept the invitation to be a speaker but do not wish to have your information made public, it is your responsibility to inform your Session Coordinator so that appropriate arrangements may be made to honor this request.

Confirmed Speaker Acceptance:

Kevin D. Crowley

Printed Name

Sent electronically

Signature

National Academies

Organization

November 22, 2010

Date

IMPORTANT NOTE: Speaker(s)/Panelist(s) are reminded to pre-register for the conference. Registration opens in early January 2011.

Return completed confirmation form by November 19, 2010.

SPEAKER/PANELIST BIOGRAPHICAL INFORMATION

Speaker Biographical Information:

Please provide a short bio for introduction during the conference and posting on the public website (MS Word format preferred).

KEVIN D. CROWLEY, Ph.D., is senior board director of the Nuclear and Radiation Studies Board, which advises the National Academies on the design and conduct of studies on radiation health effects, radioactive-waste management and environmental cleanup, and nuclear security and terrorism. The board also provides scientific support to the Radiation Effects Research Foundation in Hiroshima, Japan, a joint U.S.-Japanese scientific organization that investigates the health effects arising from exposures to ionizing radiation among World War II atomic-bombing survivors. Dr. Crowley's professional interests and activities focus on the safety, security, and technical efficacy of nuclear and radiation-based technologies. He has directed or co-directed over 20 National Academies studies on topics ranging from energy supply to national security.

IMPORTANT NOTE: *Speaker(s)/Panelist(s) are reminded to pre-register for the conference. Registration opens in early January 2011.*

Return completed speaker bio by November 19, 2010

From: Crowley, Kevin
Sent: 22 Nov 2010 13:30:06 -0500
To: Brock, Terry
Subject: RE: RIC 2011 Speaker Invitation (Analysis of Cancer Risk in Populations Living near Nuclear Facilities)

Got it, Terry. Our server must like you.

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, November 22, 2010 1:29 PM
To: Crowley, Kevin
Subject: RIC 2011 Speaker Invitation (Analysis of Cancer Risk in Populations Living near Nuclear Facilities)

Hi Kevin,

We've been getting the attached RIC invitation e-mails bounced back from the NAS server.

Let me know if you get this.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

Subject: RIC 2011 Speaker Invitation (Analysis of Cancer Risk in Populations Living near Nuclear Facilities)

11/10/2010

[Kevin Crowley, Ph.D., Sr. Board Director, Nuclear and Radiation Studies Board, National Academy of Science]

Dear Dr. Kevin Crowley:

It is my sincere pleasure to invite you to speak at NRC's 23rd annual United States Nuclear Regulatory Information Conference (RIC). The Conference will be held on March 8-10, 2011, at the Bethesda North Marriott Hotel and Conference Center, 5701 Marinelli Road, North Bethesda, MD 20852. Every year, the RIC brings together over 3,000 CEOs and presidents of nuclear industry licensees, vendors insurers, law firms, consultants, nuclear industry associations and regulators from around the world to address mutual challenges and share information.

Specific session details are provided below:

Session Title and Abstract: Analysis of Cancer Risk in Populations Living near Nuclear Facilities

Session Goals and Learning Objectives: The Nuclear Regulatory Commission has requested the National Academy of Sciences (NAS) to update the 1990 U.S. National Institutes of Health - National Cancer Institute (NCI) report, "Cancer in Populations Living Near Nuclear Facilities." The staff uses the NCI report as a primary resource when communicating with the public about cancer mortality risk in counties that contain or are adjacent to nuclear power facilities. In the new study, the NRC is also interested in having the NAS evaluate cancer diagnosis rates, as well as exploring how to divide the study areas around the facilities into geographical units smaller than the counties used in the NCI report. This session will provide a historical context of NRC's request to NAS with an introduction of the study committee and study schedule. In addition, speakers from various perspectives will present their views on the study.

Other Potential Speakers/Panelists:

- Dr. Terry Brock, Sr. Project Manager, Health Effects Branch, Office of Nuclear Regulatory Research, NRC

- Dr. Edward F. Maher, President, Health Physics Society

- Dr. Thomas B. Cochran, Senior Scientist, Natural Resources Defense Council

- Mr. Ralph Andersen, Senior Director, Radiation Safety and Environmental Protection, Nuclear Energy Institute

Session Coordinator:

Vered Anzenberg, Ph.D
Nuclear Engineer, Health Effects Branch
Mailstop: CSB 03A07M
Washington, DC 20555
(O) 301-251-7546; (F) 301-251-7416
Vered.Anzenberg@nrc.gov

Please find enclosed with this letter a confirmation packet and tentative program overview. The purpose of the confirmation packet is to obtain your permission to use your name, photographs, presentation, etc, in NRC's RIC printed materials and on the RIC website. The confirmation form is written so that you are aware that it is your responsibility to inform the Session Coordinator if you prefer your information not be posted prior to the conference. Upon acceptance of this invitation, please complete and return the enclosed "Confirmation Packet" including a completed confirmation form, a signed acceptance form and biographical information by **November 19, 2010** to ensure inclusion in the final printed program. This can be returned to the **Session Coordinator**, (contact information above) by mail, fax, or email. Also, please include a title for your presentation. If you are unavailable to be a speaker/panelist for this session, please notify me as soon as possible.

Also enclosed is a tentative program overview, for your information. The highlighted fields indicate possible times for this session. However, at this time the exact date and time has not been determined.

I look forward to working with you to help this session be a success. If you have any questions or need further assistance, please feel free to contact me.

Sincerely,
Kathy Gibson
Deputy Division Director, Division of Systems Analysis

Enclosures:

1. Speaker/Panelist Confirmation Packet
(confirmation form/acceptance form/bio form)
2. Tentative Program Overview

From: Kosti, Ourania
Sent: 4 Mar 2011 09:24:04 -0500
To: Brock, Terry;Crowley, Kevin
Subject: RE: RIC presentation

Thank you Terry. I asked Tom and we can share his write-up with the committee and also put it on our public access database.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, March 04, 2011 9:13 AM
To: Kosti, Ourania; Crowley, Kevin
Subject: FW: RIC presentation

Hello Rania/Kevin,

FYI: Attached is Tom Cochran's RIC presentation and write-up. The rest of the session slides that we've received are here >> https://ric.nrc-gateway.gov/docs/abstracts/SessionAbstract_28.htm

Thanks,
Terry
Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Shaffer, Vered
Sent: Friday, March 04, 2011 7:12 AM
To: Brock, Terry
Cc: Bush-Goddard, Stephanie
Subject: FW: RIC presentation

FYI

From: Cochran, Tom [mailto:tcochran@nrdc.org]
Sent: Thursday, March 03, 2011 8:38 PM
To: Shaffer, Vered
Subject: RE: RIC presentation

Vered,

Attached is my report and PowerPoint. Will you be making copies of the report to hand out at the session?

Best—
Tom

Dr. Thomas B. Cochran
Senior Scientist
Natural Resources Defense Council, Inc. (NRDC)
1200 New York Avenue, N.W., Suite 400
Washington, D.C. 20005
Email: tcochran@nrdc.org
Voice (main): (202) 289-6868
Voice (direct): (202) 289-2372
Voice (Blackberry): (b)(6)
FAX: (202) 289-1060
Home:

(b)(6)

From: Shaffer, Vered [mailto:Vered.Shaffer@nrc.gov]
Sent: Monday, February 28, 2011 12:09 PM
To: Cochran, Tom
Subject: RIC presentation

Hi Tom,

I hope you are doing well.

The RIC coordinators are asking for any presentations that we still don't have by this Friday. Do you think you might be able to get me your slides by then?

If you would like to see ahead of time what your co-presenters are presenting, you can find their slides here:

https://ric.nrc-gateway.gov/docs/abstracts/SessionAbstract_28.htm

Thank you!

Vered

Vered Anzenberg Shaffer, Ph.D.
BioNuclear Engineer
Health Effects Branch
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Office 301.251.7546

 Please consider the environment before printing this e-mail

From: Kosti, Ourania
Sent: 4 Apr 2011 13:56:43 -0400
To: Shaffer, Vered
Cc: Brock, Terry
Subject: RE: RIC slides posted

Thank you for the update Vered!
Rania

From: Shaffer, Vered [mailto:Vered.Shaffer@nrc.gov]
Sent: Monday, April 04, 2011 1:56 PM
To: Kosti, Ourania
Cc: Brock, Terry
Subject: RIC slides posted

Hi Rania,

Just wanted to let you know that we have now posted all of the RIC presentation slides on our public website:

https://ric.nrc-gateway.gov/docs/abstracts/SessionAbstract_28.htm

Thanks,
Vered

From: Kosti, Ourania
Sent: 25 Jan 2012 13:56:32 -0500
To: Brock, Terry
Subject: RE: RIC-online registration is now open

Thank you! I hear that I started with a hard one...

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, January 25, 2012 1:56 PM
To: Kosti, Ourania
Subject: RE: RIC-online registration is now open

Congratulations to you on your first report. We look forward to seeing what the committee has to say.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, January 25, 2012 1:54 PM
To: Brock, Terry
Subject: RE: RIC-online registration is now open

Thank you Terry.

I am pleased to inform you that the report is out for review. We have given 3 weeks to reviewers to provide their comments.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, January 25, 2012 1:51 PM
To: Kosti, Ourania
Subject: RE: RIC-online registration is now open

I have to order the hard copies—I could not find any laying around. I'll send them off once I get them.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07

phone: 301-251-7487

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Friday, January 20, 2012 11:12 AM
To: Brock, Terry
Subject: RE: RIC-online registration is now open

Terry,
I forwarded your message to John.
I see that you have published an updated Information Digest (2011-2012). Would it be possible that you send me 2 copies?
Thank you for considering this.
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Friday, January 20, 2012 9:59 AM
To: Kosti, Ourania
Subject: RIC-online registration is now open

Hi Rania,

Please let John Burris know he can register for the RIC on-line now.

Thanks,
Terry

Please share this is with Radiation Protection Session Speakers:

Registration Update: As promised, online registration is now open! Online Registration is NOW OPEN! Please visit the external RIC website at <http://www.nrc.gov/public-involve/conference-symposia/ric/index.html>, scroll down and click on "Conference Registration" or simply click in the "RIC News and Highlights" box.

They need to register at their earliest convenience.

From: Kosti, Ourania
Sent: 30 Jun 2011 10:00:30 -0400
To: Brock, Terry
Subject: RE: San Onofre tour is on

Terry,
Below is the list of the tour participants. I wish I could say with certainty that it will not change!
Let me know if they need to contact the plant for security clearance etc.

Committee

John E. Burris
John C. Bailar, III
Phaedra S. Corso
Margaret Karagas
Timothy Mousseau
Margot Tirmarche
Lance Waller
Jeffrey J. Wong

Staff

Kevin D. Crowley
Ourania Kosti

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, June 29, 2011 4:41 PM
To: Kosti, Ourania
Subject: RE: San Onofre tour is on

San Onofre is using the Dresden tour as a template. Is there something you would like to add/delete/change?

Terry

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Wednesday, June 29, 2011 3:51 PM
To: Brock, Terry
Subject: RE: San Onofre tour is on

Terry,
If there is an agenda for the San Onofre tour, maybe we could briefly discuss it tomorrow during our 11 am phone call. Thanks –
Rania

From: Kosti, Ourania
Sent: Wednesday, June 29, 2011 11:37 AM
To: 'Brock, Terry'
Subject: RE: San Onofre tour is on

Terry,

I am afraid 2 pm is not good for Kevin. How about 11 am tomorrow?

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, June 29, 2011 11:10 AM
To: Kosti, Ourania
Subject: RE: San Onofre tour is on

Ok, I'll wait for your call at 2 PM unless I hear differently.

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, June 29, 2011 9:02 AM
To: Brock, Terry
Subject: RE: San Onofre tour is on

I believe 2 pm would work (by taking a look at Kevin's e-calendar). I will let you know if this does not work when he gets back. I look forward to our talk.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, June 29, 2011 8:58 AM
To: Kosti, Ourania
Subject: RE: San Onofre tour is on

I have to leave today at 2:45 PM. Are you two available before then?

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, June 29, 2011 8:54 AM
To: Brock, Terry
Subject: RE: San Onofre tour is on

OK. I feel that if Kevin is part of the discussion we will move forward with this faster. Kevin is out for a briefing and back later today. Should we try to call you? Let me know if you have more 'facts' that him and I can discuss before we talk to you.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, June 29, 2011 8:51 AM
To: Kosti, Ourania
Subject: RE: San Onofre tour is on

Ok on the list. I spoke to RII and would like to discuss the NFS public meeting in September.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, June 29, 2011 8:49 AM

To: Brock, Terry
Subject: RE: San Onofre tour is on

Terry,

That is great news, thank you for all your effort. I have the list of committee members that want to participate but please give me a day to confirm with our administrative assistant that there have been no changes the two days I was out of the office. I believe she is out today with a sick child.

I am sorry we missed each other on Friday. Please let me know if you want to talk today.

I also have a voicemail from Marie Moore from NFS regarding the tour there.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, June 28, 2011 9:05 AM
To: Kosti, Ourania
Subject: San Onofre tour is on

Rania,

The San Onofre tour has been approved by the licensee for July 19th. Please send me the list of committee members that plan to take the tour.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania
Sent: 30 Jun 2011 10:40:56 -0400
To: Brock, Terry
Subject: RE: San Onofre tour is on

Call 202 334 3066 and ask to be connected to Kevin, please.

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, June 30, 2011 10:39 AM
To: Kosti, Ourania
Subject: RE: San Onofre tour is on

I'm going to grab a conference room and unsure of the number. What number should I call you?

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, June 30, 2011 8:41 AM
To: Brock, Terry
Subject: RE: San Onofre tour is on

I checked with the Chair and Kevin and we are all happy with the schedule. When you decide on the exact times (I am not sure for example if we need to avoid local traffic etc by starting the tour later), please send me the schedule.

More at 11:00!

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, June 29, 2011 4:41 PM
To: Kosti, Ourania
Subject: RE: San Onofre tour is on

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Subject: RE: San Onofre tour is on

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To: 'Brock, Terry'
Subject: RE: San Onofre tour is on

Terry,
I am afraid 2 pm is not good for Kevin. How about 11 am tomorrow?

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, June 29, 2011 11:10 AM
To: Kosti, Ourania
Subject: RE: San Onofre tour is on

Ok, I'll wait for your call at 2 PM unless I hear differently.

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, June 29, 2011 9:02 AM
To: Brock, Terry
Subject: RE: San Onofre tour is on

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Sent: Wednesday, June 29, 2011 8:54 AM
To: Brock, Terry
Subject: RE: San Onofre tour is on

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Sent: Wednesday, June 29, 2011 8:51 AM
To: Kosti, Ourania
Subject: RE: San Onofre tour is on

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Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, June 29, 2011 8:49 AM
To: Brock, Terry
Subject: RE: San Onofre tour is on

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I am sorry we missed each other on Friday. Please let me know if you want to talk today.

I also have a voicemail from Marie Moore from NFS regarding the tour there.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, June 28, 2011 9:05 AM
To: Kosti, Ourania
Subject: San Onofre tour is on

Rania,

The San Onofre tour has been approved by the licensee for July 19th. Please send me the list of committee members that plan to take the tour.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania
Sent: 27 Oct 2014 15:34:03 -0400
To: Brock, Terry; Heimberg, Jennifer
Subject: RE: SONGS 1967-1980 effluent reports

Well, when you are the two-er it must be fun! When you are the parent of the two-er it is not that much fun!

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, October 27, 2014 2:29 PM
To: Kosti, Ourania; Heimberg, Jennifer
Subject: RE: SONGS 1967-1980 effluent reports
Ahhh, terrible twos . . . I do not miss those at all!

From: Kosti, Ourania [<mailto:OKosti@nas.edu>]
Sent: Monday, October 27, 2014 2:08 PM
To: Brock, Terry; Heimberg, Jennifer
Subject: RE: SONGS 1967-1980 effluent reports
I was 2 thank you very much!

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, October 27, 2014 2:07 PM
To: Heimberg, Jennifer; Kosti, Ourania
Subject: RE: SONGS 1967-1980 effluent reports
I was in fourth grade with Lawman painter pants on!

From: Heimberg, Jennifer [<mailto:JHeimberg@nas.edu>]
Sent: Monday, October 27, 2014 2:02 PM
To: Brock, Terry; Kosti, Ourania
Subject: RE: SONGS 1967-1980 effluent reports
I'm not sure Rania was born yet but I was a high school freshman—and I'm happy to forget that year.
I'm psyched to get the effluent release report, though.

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, October 27, 2014 1:59 PM
To: Heimberg, Jennifer; Kosti, Ourania
Subject: RE: SONGS 1967-1980 effluent reports
We can't forget 1980!!!

Report Title	ML Number	Yes	Available	Publicly Available	Date	Time
1969 Semi-Annual Operating Report	ML14296A220	Yes	Publicly Available	Publicly Available	Jul 31, 1969	12:00 AM
1970 Semi-Annual Operating Report	ML14296A241	Yes	Publicly Available	Publicly Available	Jul 10, 1970	12:00 AM
1971 Semi-Annual Operating Report	ML14296A277	Yes	Publicly Available	Publicly Available	Jul 12, 1971	12:00 AM
1972 Semi-Annual Operating Report for San Onofre Unit 1	ML14296A293	Yes	Publicly Available	Publicly Available	Jun 30, 1972	12:00 AM
1973 Semi-Annual Operating Report	ML14296A314	Yes	Publicly Available	Publicly Available	Jun 30, 1973	12:00 AM
San Onofre, 1974 Semi-Annual Operating Report	ML14296A335	Yes	Publicly Available	Publicly Available	Jun 30, 1974	12:00 AM
San Onofre, Unit 1, 1975 Semi-Annual Operating Report	ML14296A336	Yes	Publicly Available	Publicly Available	Jun 30, 1975	12:00 AM
San Onofre, Unit 1, 1976 Semi-Annual Operating Report	ML14296A353	Yes	Publicly Available	Publicly Available	Jul 29, 1976	12:00 AM
1977 Semi-Annual Operating Report	ML14296A402	Yes	Publicly Available	Publicly Available	Aug 19, 1977	12:00 AM
1978 Semi-Annual Operating Report	ML14296A417	Yes	Publicly Available	Publicly Available	Aug 28, 1978	12:00 PM
1979 Semi-Annual Operating Report for San Onofre Unit 1	ML14296A420	Yes	Publicly Available	Publicly Available	Aug 15, 1979	12:00 AM
1980 Semi-Annual Operating Report	ML14296A443	Yes	Publicly Available	Publicly Available	Oct 23, 2014	12:00 PM

There are 14 Documents in this Package

Page 1 of 1

From: Heimberg, Jennifer [mailto:JHeimberg@nas.edu]

Sent: Monday, October 27, 2014 12:54 PM

To: Brock, Terry; Kosti, Ourania

Subject: RE: SONGS 1967-1980 effluent reports

Thanks, Terry.

The ML # below is not recognized in the public version of the ADAMS database.

I was able to retrieve a large number (19 reports!) of the SONGS files by searching the most recently submitted files. However, I am still missing reports from 1974, 1975, 1976 and 1980.

Jenny

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]

Sent: Friday, October 24, 2014 8:04 AM

To: Kosti, Ourania; Heimberg, Jennifer

Subject: SONGS 1967-1980 effluent reports

Rania/Jenny,

Here's the ML for a package of SONGS effluent reports from 1967-1980. Please note both reports are in each years' file. Let me know if you have any trouble accessing these. (ML14296A453)

Terry Brock, Ph.D.

Office of Nuclear Regulatory Research

U.S. Nuclear Regulatory Commission

Washington D.C. 20555

Mail Stop CSB-3A07

phone: 301-251-7487

From: Brock, Terry
Sent: 8 Mar 2011 21:21:52 +0000
To: 'Kosti, Ourania';Crowley, Kevin
Cc: Shaffer, Vered
Subject: RE: Spanish meeting tomorrow at 10 AM

Ok, see you then.

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, March 08, 2011 4:20 PM
To: Brock, Terry; Crowley, Kevin
Cc: Shaffer, Vered
Subject: RE: Spanish meeting tomorrow at 10 AM

Terry,

Thank you for the invitation. I am very interested in attending. I will meet you at the gate as you suggested 9:50am. Kevin has a prior commitment and is unable to attend. He sends his regrets.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, March 08, 2011 3:56 PM
To: Kosti, Ourania; Crowley, Kevin
Cc: Shaffer, Vered
Subject: Spanish meeting tomorrow at 10 AM

Kevin/Rania

The Spanish regulatory delegation has been found and we are confirmed to meet with them to discuss their cancer study around nuclear facilities. We plan to meet tomorrow morning, Wednesday, Mar. 9 at 10 AM in One White Flint North (tall white building). I doubled checked with our international program folks and was told with even more confidence that this meeting is confirmed and will be a reality.

As such, you two are cordially invited to join us. I can meet you at the security gate at 9:50 if you decide to come. My cell is (b)(6) if you need to get a hold of me tomorrow morning.

Let me know,
Terry

From: Crowley, Kevin
Sent: 28 Feb 2011 13:52:23 -0500
To: Brock, Terry
Subject: Re: Spanish study on cancer risks

Thanks Terry. Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, February 28, 2011 09:46 AM
To: Crowley, Kevin
Subject: Spanish study on cancer risks

Kevin,

Attached is a recent Spanish study on cancer risks near nuclear facilities that I already shared it with Rania and that the committee should be aware of. The conclusions are below.

Terry

5. CONCLUSIONS

1. This study shows that, using realistic methods of estimation, the doses of artificial radiation accumulated over the entire study period that would have been received by the population as a result of the operation of the facilities are very small. Current understanding of radiobiology and epidemiology does not suggest that this exposure might be related to a higher degree of cancer mortality in the populations existing around the facilities.

2. In general terms, the study of cancer mortality in the areas surrounding the nuclear power plants and nuclear fuel cycle facilities has not detected any consistent results showing any effect of increasing mortality due to different types of cancer and associated with the artificial radiation dose received. These results are independent from the natural radiation and other socio-demographic variables controlled in the analysis.

Certain dose-response relationships have been found in the study, limited to a certain type of cancer and to a certain type of facility. These results would not appear to be due to the exposure deriving from the operation of the facilities, since these findings are not repeated at other installations of the same type and with similar characteristics of exposure. In view also of the low radiation doses estimated, it would be necessary to look for an explanation for these relationships in other possible sources or additional forms of environmental exposure, or even random.

3. Assessed overall, the results referring to natural radiation do not reflect any relevant contribution. No pattern of change may be observed in cancer mortality rates relating to natural

radiation in any of the analyses performed, neither in the vicinity of the nuclear power plants and fuel cycle facilities nor in the specific study of high and low natural radiation areas.

I hope Japan is treating you well.

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Brock, Terry
Sent: Friday, February 25, 2011 2:14 PM
To: 'Kosti, Ourania'
Subject:

A recent Spanish study to add to your bibliography.

Terry

From: Crowley, Kevin
Sent: 1 Apr 2010 09:52:27 -0400
To: Brock, Terry
Subject: RE: speaker at the NRSB meeting

Thanks Terry. I'm also working with our technology group to see if I can't get a webpage url for you to put in the press release. This would direct interested parties to our website where they could find more information about the project.

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, April 01, 2010 9:52 AM
To: Crowley, Kevin
Subject: RE: speaker at the NRSB meeting

I'll see what I can do.

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Wednesday, March 31, 2010 5:48 PM
To: Brock, Terry
Subject: RE: speaker at the NRSB meeting

Terry:

Is there any chance that you can accelerate the announcement about our participation in the study? I am concerned that if we wait too long to announce the boardmeeting agenda we will be rightly criticized for not giving enough advancednotice. If you release the announcement on April 15 we only have 11 days to the board meeting. It would be good to have at least two weeks and preferably three weeks to line up speakers and advertise this meeting.

I'm around all day tomorrow if you want to talk.

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, March 31, 2010 2:43 PM
To: Crowley, Kevin
Subject: speaker at the NRSB meeting

Hi Kevin,

Brian Sheron will be giving the NRC presentation on the cancer study at the April 26th NRSB meeting. Do you know the time and expected duration of the talk?

Thanks,
Terry
Terry Brock, Ph.D.
U.S. Nuclear Regulatory Commission
301-251-7487

From: Brock, Terry
Sent: 24 Mar 2011 13:50:13 +0000
To: 'Kosti, Ourania'
Subject: RE: statement of task

Wrong assumption. Staff/management here are very busy responding to the Japanese events. I should have a response by Tuesday next week—I anticipate we will have some edits that will have to go back to the committee for their consideration.

Thanks,
Terry
Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, March 24, 2011 9:45 AM
To: Brock, Terry
Subject: statement of task

Hello Terry,

I have not heard from you regarding the statement of task. I hope to hear from you by the end of this week or will assume that the committee's edits have been accepted. I am receiving pressure from our side to conclude on this issue.

Thank you—
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Crowley, Kevin
Sent: 20 Jul 2010 20:05:57 -0400
To: Brock, Terry
Subject: RE: status - cancer study

Hi Terry:

Sorry about the delay in sending the cancer risk proposal. Our contracts office is short handed this week. I am tied up in a board meeting through the earlyafternoon tomorrow. I can call you after that if we need to talk.

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, July 20, 2010 1:36 PM
To: Crowley, Kevin
Subject: status - cancer study

Hi Kevin,

My management has a keen interest in getting the grant established as soon as possible. All players at NRC are ready to move forward. Do you think you can send it over today?

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Crowley, Kevin
Sent: 27 Apr 2011 10:29:24 -0400
To: Brock, Terry
Subject: RE: study website is missing info

Thanks Terry. I use Chrome myself so the website looks ok to me as well. I will show these screenshots to our web people and see if we can get it resolved.

We have been trying to update the software package that is used to generate these web pages but have run into delays. The server that hosts this site was attacked by Chinese hackers a few weeks ago and we were told not to upgrade the software until a forensic analysis could be completed. I understand that the analysis is now complete and that the software is now being updated.

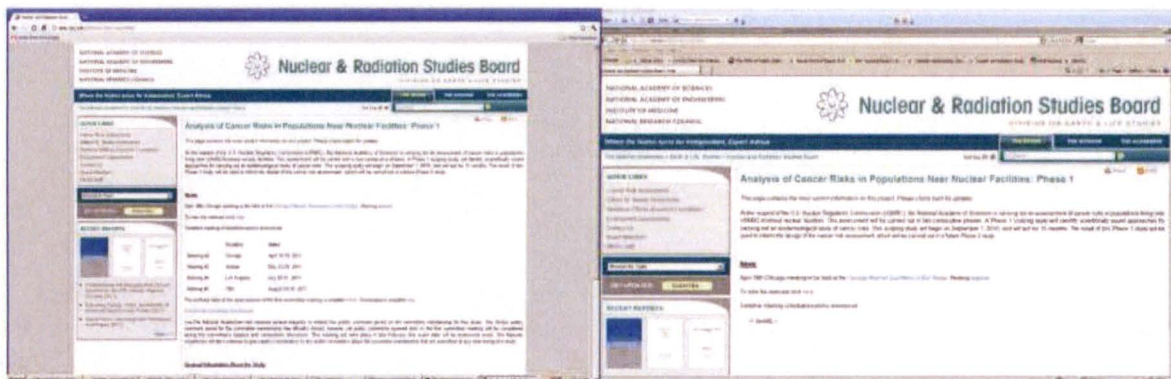
Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, April 27, 2011 10:25 AM
To: Crowley, Kevin
Subject: RE: study website is missing info

Hi Kevin,

Here's a dual screen shot of the study web page. The left side is the page viewed through the Google Chrome browser and looks ok. The right side is the page viewed through Internet Explorer 8.0 and looks buggy. I'm not sure what's going on, but thought I would bring it to your attention.

Terry



From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Tuesday, April 26, 2011 3:06 PM
To: Brock, Terry
Subject: RE: study website is missing info

Terry:

It's there—page down and click on study background. The software that we are using to generate the website has a bug that we are trying to fix. The link is active even though it is not underlined.

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, April 26, 2011 3:05 PM
To: Crowley, Kevin
Subject: study website is missing info

Hi Kevin,

The study website is missing all the background information for the study. I wanted to share it with ATSDR but there's not much information there ><http://dels.nas.edu/global/nrsb/CancerRisk>

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Crowley, Kevin
Sent: 27 Apr 2011 11:03:03 -0400
To: Brock, Terry
Subject: RE: study website is missing info

Terry:

This was actually a problem with IE. It has been fixed.

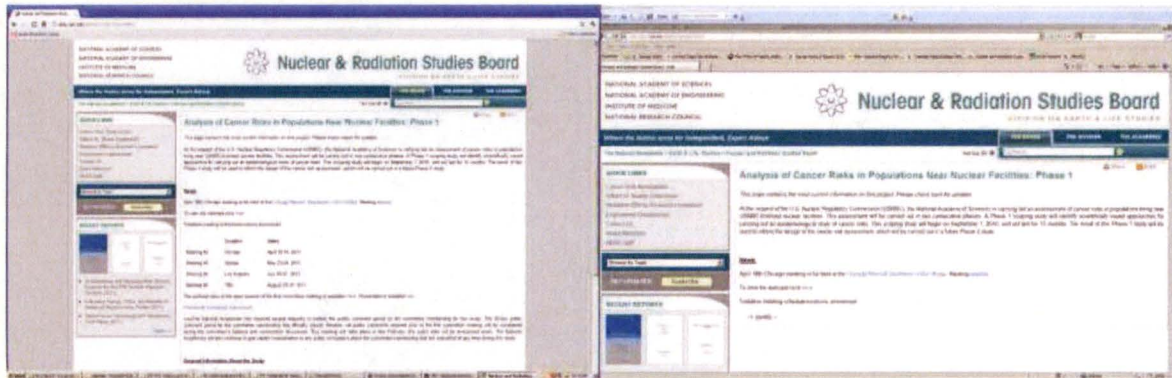
Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, April 27, 2011 10:25 AM
To: Crowley, Kevin
Subject: RE: study website is missing info

Hi Kevin,

Here's a dual screen shot of the study web page. The left side is the page viewed through the Google Chrome browser and looks ok. The right side is the page viewed through Internet Explorer 8.0 and looks buggy. I'm not sure what's going on, but thought I would bring it to your attention.

Terry



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Sent: Tuesday, April 26, 2011 3:06 PM
To: Brock, Terry
Subject: RE: study website is missing info

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Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, April 26, 2011 3:05 PM
To: Crowley, Kevin
Subject: study website is missing info

Hi Kevin,

The study website is missing all the background information for the study. I wanted to share it with ATSDR but there's not much information there ><http://dels.nas.edu/global/nrsb/CancerRisk>

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Crowley, Kevin
Sent: 12 Feb 2010 10:05:24 -0500
To: Brock, Terry
Subject: RE: Study

Thanks Terry. My first trip got cancelled because of the weather, so I will be here next week. I will be away most of the following two weeks (to southern California and Japan) if mother nature allows, but I will be checking e-mail regularly.

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Friday, February 12, 2010 9:59 AM
To: Crowley, Kevin
Subject: RE: Study

Hi Kevin,

We're still discussing our options as we review the results of the sources soughtnotice. I was hoping to be closer to a decision by the end of this week, but because of the govt. closing that got delayed. I should know more by the end of next week. Hopefully you're traveling somewhere warm.

Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Tuesday, February 09, 2010 3:26 PM
To: Brock, Terry
Subject: Study

Hi Terry:

Just checking in to see what you decided to do about the health-effects-around-nuclear-plants study. I will be travelling for good parts of the next three weeks but can be available by phone if needed.

Stay warm,

Kevin

Kevin D. Crowley, Ph.D.
Director
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001 USA
+1-202-334-3066 (voice)
+1-202-334-3077 (fax)
kcrowley@nas.edu

From: Kosti, Ourania
Sent: 12 Jul 2011 13:28:07 -0400
To: Brock, Terry
Subject: RE: Swiss Nuclear Power Plants and Childhood Cancer

Thanks, got it this morning!

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, July 12, 2011 1:27 PM
To: Kosti, Ourania
Subject: Swiss Nuclear Power Plants and Childhood Cancer

FYI

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania
Sent: 13 Jan 2015 12:49:45 -0500
To: Brock, Terry
Subject: RE: Technical Report: Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)
Attachments: NAS Cancer Risk Phase 2 Pilot Planning Report.pdf

Terry:

Attached is the pdf of the final report. You can also use this link to access it:

http://www.nap.edu/openbook.php?record_id=18968

We did not print or make copies of the report.

Rania

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]

Sent: Tuesday, January 13, 2015 12:44 PM

To: Kosti, Ourania

Subject: RE: Technical Report: Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Rania, would you send me the pdf of the final report. Also did you make any hard copies? I could use about 40 if you did.

From: Kosti, Ourania [OKosti@nas.edu]

Sent: Tuesday, January 13, 2015 12:31 PM

To: Brock, Terry

Cc: Carr, M'Lita; Greenleaf, Toni; Kosti, Ourania

Subject: Technical Report: Cancer Risks Pilot Planning study (NRC-HQ-13-G-04-0051)

Terry:

Please find attached the sixth and final quarterly programmatic update for the Cancer Risk Pilot Planning study sponsored by the U.S.NRC.

Do not hesitate to contact me if you have any questions.

Kind regards,

Rania

Ourania (Rania) Kosti, Ph.D.

Senior Program Officer

Nuclear and Radiation Studies Board

The National Academies

email: okosti@nas.edu<<mailto:okosti@nas.edu>>

phone: 202 334 3066

[[cid:image001.jpg@01D02F2C.D9F36D60](#)]

From: Crowley, Kevin
Sent: 24 Feb 2010 17:45:41 -0500
To: Brock, Terry
Subject: Re: teleconference with Brian Sheron tomorrow

Thanks Terry. See you at 3:00 pm

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Wed Feb 24 16:15:01 2010
Subject: RE: teleconference with Brian Sheron tomorrow

Here's the address:

Church Street Building
21 Church Street
Rockville, MD, 20850

We're in the white building directly southwest of the Rockville metro stop. Once you enter the building take the elevator to the sixth floor and check-in with security. Have the guards call me when you arrive and I will escort you to Brian's office.

Terry

From: Crowley, Kevin [<mailto:KCrowley@nas.edu>]
Sent: Wednesday, February 24, 2010 4:08 PM
To: Brock, Terry
Subject: Re: teleconference with Brian Sheron tomorrow

Terry:

I would prefer to meet in person. I need to move another meeting to allow enough travel time but let's assume I can do that. What other info do I need to get to your place?

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Wed Feb 24 16:02:18 2010
Subject: RE: teleconference with Brian Sheron tomorrow

Since you are in town do you want to come up to our new office building near downtown Rockville--we're literally next to the Rockville metro stop? If not you can call in at 301-251-7432.

Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Wednesday, February 24, 2010 3:55 PM
To: Brock, Terry
Subject: Re: teleconference with Brian Sheron tomorrow

Terry:

I am actually traveling home today and can be available at 3:00 pm tomorrow. What number should I call?

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Wed Feb 24 14:26:46 2010
Subject: teleconference with Brian Sheron tomorrow

Hi Kevin,

I know you are on travel this week and will be in Japan next week. Are you available tomorrow at 3 pm ET (12 pm PT) for a phone call with Brian Sheron and myself to talk about the cancer study?

Terry

Terry Brock, Ph.D.
U.S. Nuclear Regulatory Commission
301-251-7487

From: Crowley, Kevin
Sent: 25 Feb 2010 14:22:35 -0500
To: Brock, Terry
Subject: Re: teleconference with Brian Sheron tomorrow

On my way.

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Thu Feb 25 14:17:26 2010
Subject: RE: teleconference with Brian Sheron tomorrow

ok, I'll see you when you get here.

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Thursday, February 25, 2010 2:15 PM
To: Brock, Terry
Subject: Re: teleconference with Brian Sheron tomorrow

Probably. The next train is supposed to arrive in 5 minutes. Hopefully it will stop. The last two trains went through the station without stopping.

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Thu Feb 25 14:13:48 2010
Subject: RE: teleconference with Brian Sheron tomorrow

I think you should come up if the delay isn't too long. Do you think you can be here by 3:15?

Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Thursday, February 25, 2010 2:07 PM
To: Brock, Terry
Subject: Re: teleconference with Brian Sheron tomorrow

Terry:

There are delays on the Red Line so I may be late. Would you prefer to wait for me or should we meet by phone?

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Wed Feb 24 16:15:01 2010
Subject: RE: teleconference with Brian Sheron tomorrow

Here's the address:

Church Street Building
21 Church Street
Rockville, MD, 20850

We're in the white building directly southwest of the Rockville metro stop. Once you enter the building take the elevator to the sixth floor and check-in with security. Have the guards call me when you arrive and I will escort you to Brian's office.

Terry

From: Crowley, Kevin [<mailto:KCrowley@nas.edu>]
Sent: Wednesday, February 24, 2010 4:08 PM
To: Brock, Terry
Subject: Re: teleconference with Brian Sheron tomorrow

Terry:

I would prefer to meet in person. I need to move another meeting to allow enough travel time but let's assume I can do that. What other info do I need to get to your place?

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Wed Feb 24 16:02:18 2010
Subject: RE: teleconference with Brian Sheron tomorrow

Since you are in town do you want to come up to our new office building near downtown Rockville--we're literally next to the Rockville metro stop? If not you can call in at 301-251-7432.

Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Wednesday, February 24, 2010 3:55 PM
To: Brock, Terry
Subject: Re: teleconference with Brian Sheron tomorrow

Terry:

I am actually traveling home today and can be available at 3:00 pm tomorrow. What number should I call?

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Brock, Terry <Terry.Brock@nrc.gov>
To: Crowley, Kevin
Sent: Wed Feb 24 14:26:46 2010
Subject: teleconference with Brian Sheron tomorrow

Hi Kevin,

I know you are on travel this week and will be in Japan next week. Are you available tomorrow at 3 pm ET (12 pm PT) for a phone call with Brian Sheron and myself to talk about the cancer study?

Terry

Terry Brock, Ph.D.
U.S. Nuclear Regulatory Commission
301-251-7487

From: Kosti, Ourania
Sent: 9 May 2011 13:37:10 -0400
To: Brock, Terry
Subject: RE: the National Academies' committee meeting in Atlanta

Thank you!
Rania

-----Original Message-----

From: Brock, Terry [<mailto:Terry.Brock@nrc.gov>]
Sent: Monday, May 09, 2011 1:34 PM
To: Kosti, Ourania
Subject: RE: the National Academies' committee meeting in Atlanta

Hi Rania,

Will do on the request below. I'm waiting to confirm one more NRC speaker and then will send you the names. The agenda is looking good.

Terry

From: Kosti, Ourania [OKosti@nas.edu]
Sent: Monday, May 09, 2011 1:28 PM
To: Brock, Terry
Subject: the National Academies' committee meeting in Atlanta

Terry,

Please forward this message to your colleagues that will be briefing the committee at its upcoming meeting on May 23, 2011 in Atlanta, Georgia.

An early draft of the agenda is attached. This agenda is subject to change, and I will be following up with updates as necessary.

A few points:

- * Please send me the title of your presentation and the name and affiliation as you want it to appear in the final agenda as soon as possible
- * Please send me your slides no later than Thursday May 19th . Our staff will make copies of your presentation and distribute to the committee

Below you will find a list of topics that the committee has asked that you touch on during your presentation.

- * What is the nuclear fuel cycle and what parts does USNRC regulate?
- * Number, types, locations of fuel cycle facilities in US
- * Brief review of licensing/relicensing process
- * Regulation of plant releases
- * Overview of environmental sampling including background radiation level assessment

Please do not hesitate to contact me with any questions you may have regarding your presentation or other meeting logistics.

Regards

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 6 May 2011 16:09:08 -0400
To: Brock, Terry
Subject: RE: title of U.S.NRC presentations

Terry,
We are pretty confident that there will be a 7:30 – 9:00 pm public comments session on Monday 23rd.
Have a good weekend!
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, May 05, 2011 9:42 AM
To: Kosti, Ourania
Subject: RE: title of U.S.NRC presentations

Should be a good meeting. Looking forward to it!

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, May 05, 2011 9:38 AM
To: Brock, Terry
Subject: RE: title of U.S.NRC presentations

I will come back to you shortly with the answer. There will surely be an opportunity for the public to make comments. Since the agenda is growing so much I am not sure if the public comments session will be immediately after the data gathering sessions or in the evening as it was in Chicago.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, May 05, 2011 9:36 AM
To: Kosti, Ourania
Subject: RE: title of U.S.NRC presentations

Will there be a public evening session in Atlanta?
Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, May 04, 2011 3:32 PM
To: Brock, Terry
Subject: RE: title of U.S.NRC presentations

Yes, please do make reservations.
And thanks for the note.

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, May 04, 2011 3:31 PM
To: Kosti, Ourania
Subject: RE: title of U.S.NRC presentations

From: Crowley, Kevin
Sent: 11 Jan 2011 10:40:13 -0500
To: Brock, Terry
Subject: RE: Tomorrow

I'm available then and will be standing by for your call.

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, January 11, 2011 10:38 AM
To: Crowley, Kevin
Subject: RE: Tomorrow

Hi Kevin,

Sorry we missed each other yesterday. For tomorrow I'm (b)(6) at that time. Are you available for a phone call tomorrow afternoon at 3 PM?

Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Tuesday, January 11, 2011 10:32 AM
To: Brock, Terry
Subject: Tomorrow

Terry:

I will be meeting with a couple of commissioners tomorrow to discuss a recently released NAS report. Would it be worthwhile for me to stop by your office after the meeting? I could probably get to your office between 11:00-11:30. Perhaps we could have lunch together.

Kevin

From: Kosti, Ourania
Sent: 28 Oct 2014 13:05:00 -0400
To: Brock, Terry
Cc: Heimberg, Jennifer
Subject: RE: tomorrow's call

Here you go. Please send to anyone else that is participating from the USNRC.

USA

Toll-Free: 866-528-2256

Caller Paid: 216-706-7052

Access Code (b)(6)

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, October 28, 2014 1:04 PM
To: Kosti, Ourania
Cc: Heimberg, Jennifer
Subject: RE: tomorrow's call

Let's use your number. Please resend.

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Tuesday, October 28, 2014 12:17 PM
To: Brock, Terry
Cc: Heimberg, Jennifer
Subject: tomorrow's call

Terry:

Will you send call-in info for tomorrow's teleconference? If not I can provide mine to the group.

Thank you,

Rania

Ourania (Rania) Kosti, Ph.D.

Senior Program Officer

Nuclear and Radiation Studies Board

The National Academies

email: okosti@nas.edu

phone: 202 334 3066

From: Crowley, Kevin
Sent: 15 Jun 2010 08:00:16 -0400
To: Brock, Terry
Cc: Case, Sarah
Subject: RE: Updatd prospectus for cancer risk study

Thanks Terry. Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, June 14, 2010 10:24 AM
To: Crowley, Kevin
Cc: Case, Sarah
Subject: RE: Updatd prospectus for cancer risk study

Kevin,

My comments start on page 6.

Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Friday, June 11, 2010 2:32 PM
To: Brock, Terry
Cc: Case, Sarah
Subject: Updatd prospectus for cancer risk study

Terry:

Here is the updated prospectus for the cancer risk study.

Kevin

From: Kosti, Ourania
Sent: 7 Apr 2011 15:47:36 -0400
To: Brock, Terry
Subject: RE: update

Hi Terry,

Glad to hear that the tour can happen even in the scenario that NRC is absent, but of course I hope this will not be needed. I will let you know how we deal with our internal concerns, it would be a real shame if we miss the opportunity to tour the plant. Apparently the practices have changed since the cesium-chloride study. Thanks for the contact numbers.

The agenda looks good!

Regarding the Illinois Health Department; they conducted a second study, similar design, but this time not strictly ecologic as they had incidence record level data and residents were classified according to 10/20/30 distance miles from the plants. No trend was observed with risk. The manuscript was accepted in the Journal of environmental and occupational health and should be out May. I will keep an eye for it. Tiefu is having funding discussions the day of the meeting and he does not want to postpone. No other representative could participate instead.

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Thursday, April 07, 2011 3:28 PM
To: Kosti, Ourania
Subject: RE: update

Responses below. The NRC has funds to operate one week post shutdown, so worst case I will be furloughed next week Friday.

Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Thursday, April 07, 2011 2:38 PM
To: Brock, Terry
Subject: update

Terry,

I thought I give you an update on where we stand with the meeting preparations especially since we may loose contact if there is a government shutdown.

-There is an internal issue (FACA regulation compliance) regarding the tour and why the public cannot participate since it is a data gathering activity. We are seeking advice on how to handle the issue.

Ok, let me know. It would be a shame to miss the tour. I recall during the cesium-chloride study the committee went on some tours. Maybe Kevin can recall how those tours were handled.

-Regarding the tour agenda; is it finalized and can the tour happen without the NRC accompanying us?

Below is the agenda Exelon agreed to support and will carry on if the govt. shutdowns. However, the NRC resident inspector at Dresden will not be furloughed and will be able to help, he's Chuck Phillips at (815) 942-9267. The Exelon contact is Dennis Leggett (815) 416-2800.

- 08:30 – 9:00 Arrive on-site and process visitors
- 09:00 – 9:30 Introduction, Facility Overview – Exelon
- 09:30 – 10:15 Explain how effluent releases are measured and reported, off-site doses calculated, and environmental monitoring programs are conducted – Exelon
- 10:15 – 11:30 Plant walk-down – Exelon
 - Radiation monitoring equipment for air and liquid effluent releases
 - Turbine building and spent fuel pool
- 11:30 – 12:15 On-site grounds tour of cooling lakes, groundwater monitoring wells, area TLDs – Exelon
- 12:15 – 01:15 Working lunch on-site
 - NRC inspections of environmental monitoring and effluents program – NRC
- 01:15 – 03:00 Off-site tour of cooling towers and sampling locations for air, water, vegetation, and direct radiation (TLD stations) - Exelon
- 03:00 – 03:15 Wrap-up

-I communicated with Tiefu Shen from the Health Department of Illinois. Unfortunately they are unable to attend due to previous commitments. I had a very nice conversation with him and he pointed to me to a publication of a new study by their department that should be coming out in May

Thanks for touching base. I would have hated to come to Illinois and not contacted him. What are they studying? Do you have a link?

-Still waiting to hear from Exelon if they want to participate to the open sessions on Monday. I called and e-mailed Willie on another matter and have not heard back either.

Best -

Rania
Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board

The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 24 Feb 2015 07:49:54 -0500
To: Brock, Terry
Subject: RE: Update?

Thanks Terry. Let's do that.
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Tuesday, February 24, 2015 7:48 AM
To: Kosti, Ourania
Subject: RE: Update?

Hello Rania,

We're still discussing options on the next steps. I'm in the middle of briefing up the management chain and probably up to the Commission level by the end of March. Let's chat then when I'll have a better feel for the direction the agency wants to go.

Best,
Terry

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Monday, February 23, 2015 3:42 PM
To: Brock, Terry
Cc: Kosti, Ourania
Subject: Update?

Terry:

I wanted to let you know that the Cancer Risk Pilot Execution Study was approved by the Academies' governing board on February 11.

I was wondering if you have an update on how your agency plans to proceed with deciding whether to fund the study and an associated preliminary timeline.

Thanks,
Rania

Ourania (Rania) Kosti, Ph.D.
Senior Program Officer
Nuclear and Radiation Studies Board
The National Academies
email: okosti@nas.edu
phone: 202 334 3066

From: Crowley, Kevin
Sent: 3 May 2010 09:59:38 -0400
To: Brock, Terry
Subject: RE: Update on cancer risk study

I think it is my turn to come to your place. See you at 1:30 pm on Thursday.

Kevin

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Monday, May 03, 2010 9:59 AM
To: Crowley, Kevin
Subject: RE: Update on cancer risk study

Thursday afternoon or any time on Friday works for me. How about 1:30 PM on Thursday? Do you want to meet up here in Rockville?

Terry

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Monday, May 03, 2010 9:56 AM
To: Brock, Terry
Subject: Update on cancer risk study

Hi Terry:

Just a quick update on the cancer risk study. I have been asked to appear before the NAS Governing Board on Wednesday to discuss this project. Perhaps we can meet on Thursday or Friday to discuss the draft statement of task. I am available on both afternoons.

Kevin

From: Kosti, Ourania
Sent: 25 May 2011 15:16:03 -0400
To: Brock, Terry
Subject: RE: Updated Fuel Cycle Facilities presentation

Thank you. We will post the updated presentation.
Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, May 25, 2011 3:09 PM
To: Kosti, Ourania
Subject: Updated Fuel Cycle Facilities presentation

Hi Rania,

Region II staff noticed some omissions on their fuel cycle facility map. Attached is a revised slide set for posting to the study website that has the corrected map to include the inadvertently omitted location for NFS, adds the Eagle Rock site in Idaho, and more accurately reflects the location of the MOx fuel facility as well as the facilities located in Piketon (Portsmouth), Ohio.

Thanks,
Terry

From: Kosti, Ourania
Sent: 10 Aug 2011 10:57:52 -0400
To: Brock, Terry
Subject: RE: (b)(6) RE: request from the dosimetry working group; NAS study

I am available, but I do not think Kevin is.

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, August 10, 2011 10:57 AM
To: Kosti, Ourania
Subject: RE: (b)(6) RE: request from the dosimetry working group; NAS study
Importance: High

Rania,

The NRC RII folks would like to coordinate with you now about the meeting. Are you available for a conference call? I'll call you

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, August 10, 2011 10:38 AM
To: Brock, Terry
Subject: RE: (b)(6) RE: request from the dosimetry working group; NAS study

Thank you Terry, I hope you have a great vacation.

One thing I would like to hear from you is whether we should be making travel arrangements for the September 8 public meeting in Erwin-I have some other commitments that I need to work around the meeting .

Rania

From: Brock, Terry [mailto:Terry.Brock@nrc.gov]
Sent: Wednesday, August 10, 2011 10:19 AM
To: Kosti, Ourania
Subject: (b)(6) RE: request from the dosimetry working group; NAS study

Hi Rania,
I'll see what I can find. I'm going to be (b)(6) starting on Friday and will be back in the office on Monday, 8/22--so you'll probably get the response after I'm back because I have a couple of other loose ends I need to tie up before I leave on Friday. If you need anything during my absence contact Stephanie Bush-Goddard at 301-251-7528.

Thanks,
Terry
Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Kosti, Ourania [mailto:OKosti@nas.edu]
Sent: Wednesday, August 10, 2011 9:39 AM
To: Brock, Terry
Subject: request from the dosimetry working group; NAS study

Dear Terry Brock,

The committee would appreciate your help with retrieving the following reports:

- 1974 N. Anna environmental report. If you cannot find that, the 1977 Oconee environmental and effluent reports can be substituted

The committee is also looking for information on effluents, environmental monitoring and MEI doses in the late 1970s and early 1980s to compare with similar info in reports they have covering recent years and they would like to request:

- document of 1989 and/or 1979 NFS license renewal that reviews effluent and environmental data (The 1999 report they have for NFS is titled: Environmental Assessment for Renewal of Special Nuclear Material License :No. SNM-124 Nuclear Fuel Services, Inc. Erwin, Tennessee Docket 70-143U)
- similar to above but for Portsmouth or Paduca

One member says that he looked through all the effluent reports they got from NRC but many of them did not mention MEI doses at all. It is not clear whether they were even required to report MEI doses in the 1970s. When were MEI doses first required to be reported and is there any summary of annual MEI doses going back to the 1970s that NRC is aware of.

Thank you in advance for your time.

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077

email: okosti@nas.edu

From: Kosti, Ourania
Sent: 5 Jul 2011 09:49:24 -0400
To: Brock, Terry
Subject: reports received

Terry,
Thank you, I have now received the reports and will share with our committee.
Best,
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
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Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 2 Sep 2011 12:56:40 -0400
To: Brock, Terry
Subject: rescheduling meeting #5; cancer risk study

Dear Terry,

This is a quick email to let you know that the cancer risk assessment meeting #5 is rescheduled for **October 20-21, in Washington DC**. We have started looking into availability of meeting space. So far we think that the open session will be somewhat of a replicate of the original meeting in terms of presentations, but I will follow up with you as we start finalizing the details.

Thank you –

Rania

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email: okosti@nas.edu

From: Crowley, Kevin
Sent: 14 Apr 2010 15:45:40 -0400
To: Crowley, Kevin
Subject: Revised agenda for April 26 NRSB meeting
Attachments: NRSB public agenda April 14 2010 draft.pdf

Dear colleagues:

I am sending along a revised agenda (attached) for the April 26 NRSB meeting for your information. We have added a morning open session to the agenda to receive presentations from the DOE Deputy Secretary and a representative from the DOE Office of Environmental Management. The afternoon presentations from FDA and the session on cancer risks near nuclear power facilities will go on as previously planned.

Regards,

Kevin

Kevin D. Crowley, Ph.D.
Director
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001 USA
+1-202-334-3066 (voice)
+1-202-334-3077 (fax)
kcrowley@nas.edu

THE NATIONAL ACADEMIES

Advisers to the Nation on Science, Engineering, and Medicine

NUCLEAR AND RADIATION STUDIES BOARD

Fifteenth Meeting: April 26, 2010
Keck Center, Room 100
500 5th Street, NW, Washington, DC 20001

April 14, 2010 Draft

MORNING OPEN SESSION

- 10:25 am **Call to order and welcome to the morning open session**
Richard Meserve, NRSB chair
- 10:30 am **Cradle-to-Grave Nuclear Fuel Cycles**
Hon. Daniel Poneman, Deputy Secretary of Energy, U.S. Department of Energy
- 10:45 am Questions and discussion
- 10:55 am **Strategies for Transforming Tank Waste Cleanup at Department of Energy Sites**
Steve Schneider, Co-Leader, Tank Waste System Project Team, DOE-EM
- 11:25 am Questions and discussion
- 11:35 am **Opportunity for Public Comment**
- 11:50 am **Adjourn morning session**
- Lunch available for guests in Keck Refectory (3rd floor)

AFTERNOON OPEN SESSION

- 1:25 pm **Call to order and welcome to the afternoon open session**
Richard Meserve, NRSB chair
- 1:30 pm **FDA Initiative to Reduce Unnecessary Radiation Exposures from Medical Imaging**
Sean Boyd, Commander, U.S. Public Health Service
- FDA Update on Regulation of Tanning Devices/Sunlamps**
Sharon Miller, Captain, U.S. Public Health Service
- 2:00 pm Questions and discussion

CANCER RISK IN POPULATIONS LIVING NEAR NUCLEAR POWER FACILITIES

- 2:10 pm **U.S. Nuclear Regulatory Commission Request to the NAS for a Study of Cancer Risk in Populations Living Near Nuclear Power Facilities**
Brian Sheron, Director, Office of Nuclear Regulatory Research, U.S. Nuclear Regulatory Commission
- 2:40 pm Questions and discussion
- 2:50 pm **Congressional Staff Perspectives on the Study Request and Task**
Michal Freedhoff, Policy Director, Office of Congressman Edward J. Markey, Chairman of the Energy and Environment Subcommittee
Other staff TBA
- 3:05 pm Questions and discussion
- 3:15 pm **Nuclear Industry Perspectives on the Study Request and Task**
Ralph L. Andersen, Senior Director, Radiation Safety & Environmental Protection, Nuclear Energy Institute
- 3:30 pm Questions and discussion
- 3:40 pm Break
- 4:00 pm **Perspectives on the Study Task and Approaches**
Arjun Makhijani, President, Institute for Energy and Environmental Research
- 4:20 pm Questions and discussion
- 4:30 pm **Developing Testable Hypotheses for Cancer Risks near Nuclear Power Facilities**
Steven Wing, Associate Professor of Epidemiology, University of North Carolina, Gillings School of Global Public Health
- 4:50 pm Questions and discussion
- 5:00 pm **Opportunity for Public Comment**
- 5:45 pm **Adjourn Open Session**

From: Kosti, Ourania
Sent: 22 Feb 2011 13:49:24 -0500
To: Brock, Terry
Subject: slides

Hello Terry,

This is a very friendly reminder that we need to forward your slides to the webcast Team by tomorrow am.

Thank you and I hope you had a good weekend –
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Crowley, Kevin
Sent: 20 Apr 2010 21:41:34 -0400
To: Brock, Terry
Subject: Teleconference

Terry:

We are arranging to audio webcast the NRSB meeting session (2:10 pm to adjourn). I should be able to send you the link tomorrow.

I understand that the webcast will be digitally recorded and posted to our website after the meeting.

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Crowley, Kevin
Sent: 17 May 2010 17:41:47 -0400
To: Sheron, Brian
Cc: Brock, Terry
Subject: Thank you
Attachments: NRSB_thank_you_Brian_Sheron.pdf

Hi Brian:

I am attaching a formal note of thanks for your participation at last month's meeting of the NRSB. Please let me know if you would also like to receive the original paper copy.

Regards,

Kevin

Analysis of Cancer Risks in Populations near Nuclear Facilities: Phase 1

Third Committee Meeting: May 23-24, 2011

Atlanta, Georgia

**Renaissance Concourse Atlanta Airport Hotel
One Hartsfield Centre Parkway, Atlanta, Georgia, 30354**

Phone: 1-404-209-9999

Meeting Room: Concourse D

Monday, May 23, 2011

- 8:30 am **Call to order and welcome**
John Burris, committee chair
- 8:40 am **Overview of the nuclear fuel cycle and civilian fuel cycle facilities**
TBD, U.S.NRC
- 9:20 am **Questions and discussion**
- 9:30 am **Radiological environmental monitoring program at fuel cycle facilities**
TBD
- 9:50 am **Questions and discussion**
- 10:00 am **Examining environmental and health data and study design (tentative title)**
Steve Dearwent, Epidemiologist, Agency for Toxic Substances and Disease Registry (ATSDR), Department of Health and Human Services, Centers for Disease Control and Prevention
- 10:20 am **Questions and Discussion**
- 10:30 am **BREAK**
- 10:45 am **Dose reconstruction in the epidemiologic study of the possible effect of ionizing radiation deriving from the operation of Spanish nuclear fuel facilities (tentative title)**
Lucila Ramos, Deputy Director for Environmental Radiation Protection, Nuclear Safety Council (CSN), Spain
- 11:05 am **Questions and Discussion**
- 11:15 am **Epidemiologic study of the possible effect of ionizing radiation deriving from the operation of Spanish nuclear fuel facilities (tentative title)**
Gonzalo López Abente, National Center for Epidemiology. Carlos III Institute of

Health, Spain

- 11:35 am **Questions and Discussion**
- 11:45 am **General Discussion**
- 12:00 pm **Adjourn morning data gathering session**
- 1:00 pm **Cancer risks near nuclear facilities: the importance of research design and explicit study hypotheses (tentative title)**
Steve Wing, Associate Professor, Department of Epidemiology, University of North Carolina-Chapel Hill
- 1:20 pm **Questions and discussion**
- 1:30 pm **Challenges for the historical dose reconstruction of US nuclear power plants (round table discussion)**
John Till, President, Risk Assessment Corporation
- 1:50 pm **Questions and discussion**
- 2:00 pm **Dose reconstruction models (tentative title)**
Bruce Napier, Staff Scientist, Environmental Sciences Group Pacific Northwest National Laboratory
- 2:20 pm **Questions and discussion**
- 2:30 pm **BREAK**
- 2:45 pm **Designing large scale case-control studies (tentative title)**
Dana Flanders, Professor, Department of Environmental Health Epidemiology, Rollins School of Public Health, Emory University
- 3:05 pm **Questions and discussion**
- 3:15 pm **The National Program of Cancer Registries (NPCR) (tentative title)**
Christie Ehemann, Chief, Cancer Surveillance Branch, Centers for Disease Control and Prevention
- 3:35 pm **Questions and discussion**
- 3:45 pm **The Surveillance, Epidemiology and End Results (SEER) registry (tentative title)**
TBD
- 4:05 pm **Questions and discussion**

- 4:15 pm **The Georgia state cancer registry (tentative title)**
*Kevin Ward, Georgia Center for Cancer Statistics, Rollins School of Public Health,
Emory University*
- 4:35 pm **Questions and discussion**
- 4:45 pm **General Discussion**
- 5:00 pm **Opportunity for public comments**
(signup sheet provided in the room)
- 5:30 pm **Adjourn data-gathering session open to the public**

EVENING PUBLIC COMMENTS SESSION

- 7:30 pm **Opportunity for public comments**
- Opening remarks
John Burris, committee chair;
 - Public comments (signup sheet provided in the room)
- 9:00 pm **Adjourn evening public comments session**

From: Crowley, Kevin
Sent: 6 May 2010 08:43:24 -0400
To: Brock, Terry
Subject: Today's Meeting

Terry:

Could you remind me again of the Metro Station that is next to your building, and also what floor you are on? Thanks.

See you at 1:30 pm.

Kevin

From: Kosti, Ourania
Sent: 8 Apr 2011 12:23:17 -0400
To: Brock, Terry
Subject: tour participants change

Terry,

Our staff has decided that it is better if Shauntee Whetstone participates at the tour as opposed to Erin Wingo. Can you please make the change known to Exelon?
Again, I am so sorry for the constant changes.

Rania

Ourania (Rania) Kosti, Ph.D.
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Nuclear and Radiation Studies Board
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From: Interested parties list for activities pertaining to the Cancer Risk project on behalf of Greenleaf, Toni
Sent: 24 Oct 2012 08:47:18 -0400
To: CANCERRISKSTUDY@LSW.NAS.EDU
Subject: U.S.NRC announces decision to move forward with the pilot study on cancer risks near seven U.S. nuclear facilities
Attachments: press release 10 23 2012.pdf

Attachment is publicly available as ML12298A078.

Dear interested parties:

A U.S. Nuclear Regulatory Commission (USNRC) press release (attached) has announced the decision to move forward with the pilot activity on analysis of cancer risks near the seven nuclear facilities recommended by the National Academy of Sciences (NAS) Cancer Risk: Phase 1 committee in its recent report (http://www.nap.edu/catalog.php?record_id=13388). USNRC staff has submitted an issues paper to the Commission that contains opinions on why the study would be useful and comments on the NAS Phase 1 report. The link to the issues paper is below.

<http://adamswebsearch2.nrc.gov/webSearch2/main.jsp?AccessionNumber='ML12249A121>

You receive this message because you have expressed an interest in the NAS Cancer Risk: Phase 1 study. Please, feel free to circulate this message to interested parties. If you would like to be removed from the list and do not wish to receive notifications about the next study phase, please send us an email at crs@nas.edu with the title REMOVE FROM LIST. If you are member of the press and have questions regarding the announcement, please contact Jennifer Walsh, media relations officer, at jwalsh@nas.edu or 202-334-2183.

Ourania (Rania) Kostis, Ph.D.
Senior Program Officer
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email: okosti@nas.edu

Toni Greenleaf
Nuclear and Radiation Studies Board
202 334 3066

From: Kosti, Ourania
Sent: 4 Oct 2011 17:00:11 -0400
To: Brock, Terry
Subject: update

Hello Terry,

I thought I should give you a quick update on (a) the NFS tour and (b) the 5th committee meeting.

- (a) The NFS tour is scheduled for October 13th. Although we are still working on the details with NFS, we plan to start the tour around 1pm and the tour is expected to last 3-4 hours depending on the number of committee questions. Three committee members and two NAS staff will visit the plant. The evening of October 13th (7-9 pm) we will hold a public meeting. The meeting will most likely be at the Unicoi county high school.
- (b) Below is the agenda for the 5th committee meeting. The agenda will be made public tomorrow.

Thank you.

Rania

DATA GATHERING SESSION: OPEN TO THE PUBLIC
Meeting Room: 101

- | | |
|---------|--|
| 1:20 pm | Call to order and welcome
<i>John Burris, committee chair</i> |
| 1:35 pm | Studies of health effects near Massachusetts nuclear power stations
<i>Richard Clapp, D.Sc., MPH, Professor Emeritus, Boston University School of Public Health and Adjunct Professor, University of Massachusetts - Lowell</i> |
| 2:00 pm | Questions and Discussion |
| 2:10 pm | Nuclear Regulatory Commission and Stakeholder Interactions
<i>Scott Burnell, Public Affairs Officer, Office of Public Affairs, U.S. Nuclear Regulatory Commission and Lance J Rakovan, Senior Communications Specialist, Office of the Executive Director for Operations, U.S. Nuclear Regulatory Commission</i> |
| 2:35 pm | Questions and Discussion |
| 2:45 pm | Radiation Risk Communications: Challenges and Opportunities
<i>TBD U.S. Environmental Protection Agency, Radiation Protection Division</i> |

- 3:10 pm **Questions and Discussion**
- 3:20 pm **Next Steps for the Analysis of Cancer Risk in Populations
Near Nuclear Facilities Study**
*Terry Brock, Senior Program Manager, Office of Nuclear
Regulatory Research, U.S. Nuclear Regulatory Commission*
- 3:40 pm **Questions and Discussion**
- 4:00 pm **Public Comments**
- 5:00 pm **Adjourn session open to the public**

Ourania (Rania) Kosti, Ph.D.
Program Officer
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email: okosti@nas.edu

From: Brock, Terry
Sent: 25 May 2011 19:09:16 +0000
To: 'Kosti, Ourania'
Subject: Updated Fuel Cycle Facilities presentation
Attachments: Overview Nuclear Fuel Cycle PUBLIC with Rev Map.pptx

Hi Rania,

Region II staff noticed some omissions on their fuel cycle facility map. Attached is a revised slide set for posting to the study website that has the corrected map to include the inadvertently omitted location for NFS, adds the Eagle Rock site in Idaho, and more accurately reflects the location of the MOx fuel facility as well as the facilities located in Piketon (Portsmouth), Ohio.

Thanks,
Terry



United States Nuclear Regulatory Commission

Protecting People and the Environment

Overview of the Nuclear Fuel Cycle

Presentation to the National Academy of Sciences Committee for
Analysis of Cancer Risks in Populations near Nuclear Facilities

John M. Pelchat, Senior Fuel Facility Inspector

U.S. NRC Region II

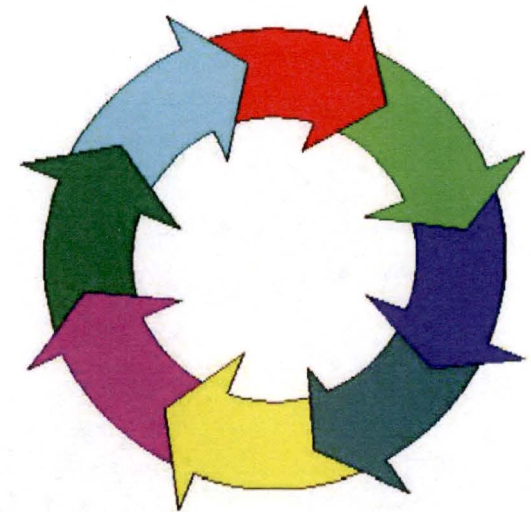


Division of Fuel Facility Inspection

Outline

- Nuclear Fuel Cycle & Major Facilities

- Federal Laws & NRC Regulations

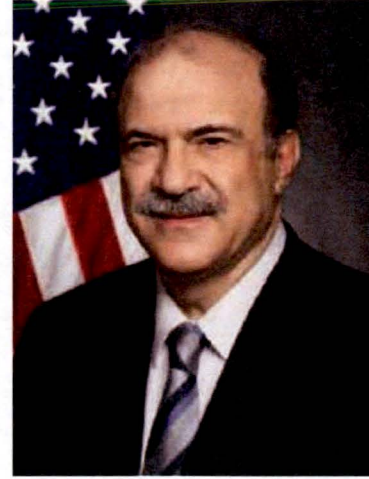


Applicable Laws

- Atomic Energy Act
- Energy Reorganization Act
- Nuclear Waste Policy Act
- Energy Policy Act



Mission of the NRC



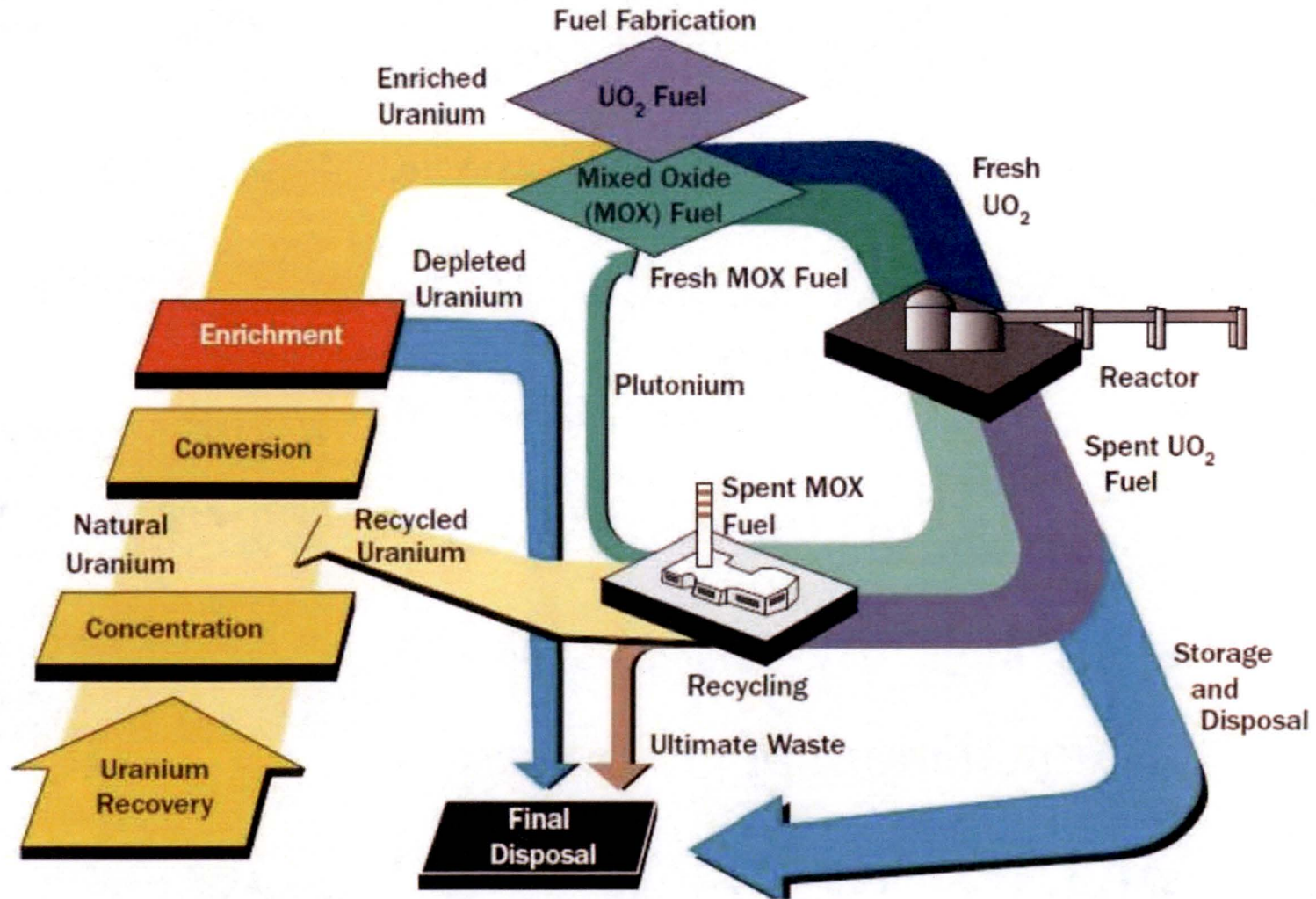
- **Ensure adequate protection of public health and safety.**
- **Promote the common defense and security.**
- **Protect the environment.**

Fuel Cycle Facility Regulations in General

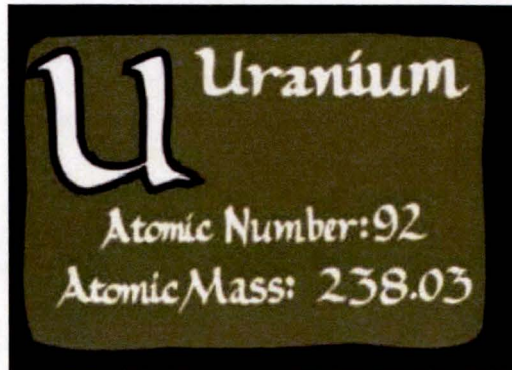
- Title 10 of the Code of Federal Regulations (10 CFR)
- Facilities are very different from one another and are covered by different parts: 10 CFR, Parts 40, 70, 76
- All facilities must comply with radiation protection standards, including public dose limits in 10 CFR 20

Nuclear Fuel Cycle

Figure 31. The Nuclear Fuel Cycle



Steps of the Fuel Cycle



- Mining of the uranium ore
- Milling to remove rock & refine
- Conversion to UF_6
- Enrichment of ^{235}U
- Fuel Fabrication
- Reactor Use (Fuel Burn)
- Storage of Spent Nuclear Fuel
- De-conversion of depleted U

Mining

- Where it all begins
 - Open pit and deep mines – uranium oxides in ores
 - In-situ Leach (ISL) method – uranium in solution
- Most U.S. uranium is imported
- Dominant radiation hazards from radon and progeny



Milling

- Refining and concentrating the uranium
- Input: rock/concentrate + chemicals
- Product: yellowcake (U_3O_8)
 - Not always yellow
 - Gray and brown common too
- Most domestic mills now are closed



Conversion

- Regulated under 10 CFR 40
- Single U.S. facility - Metropolis, IL
- Input: yellowcake in 55-gallon drums
- Output: UF_6 in 14-ton cylinders
- Dry Conversion Process
- Dominant chemical hazard: hydrogen fluoride



Enrichment

- Boosting concentration of ^{235}U vs. ^{238}U (0.71% → 5%)
 - Input: UF_6 at natural enrichment (0.7% ^{235}U)
 - Product: Low-Enriched UF_6
(3-5% ^{235}U)
 - Byproduct: Depleted U (0.2% ^{235}U)

- Gaseous diffusion plants:
 - Paducah GDP in Paducah, KY (operating)
 - Portsmouth GDP in Piketon, OH (in cold shutdown)

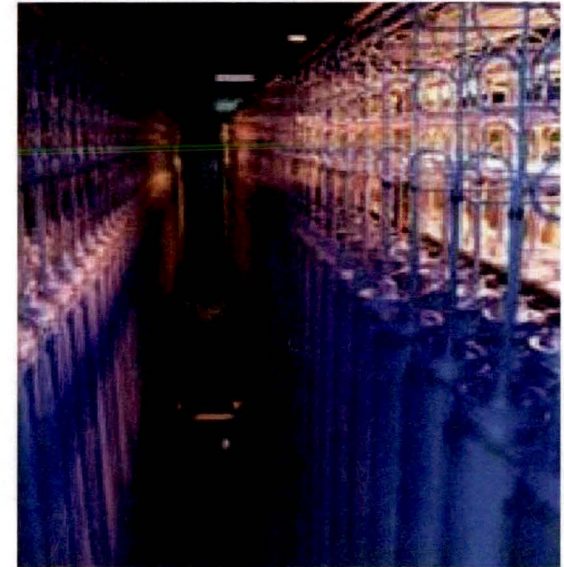


Enrichment

- Gas centrifuge plants:
 - USEC – Piketon OH
 - LES – Eunice, NM
 - AREVA – Eagle Rock Facility
Bonneville County, ID

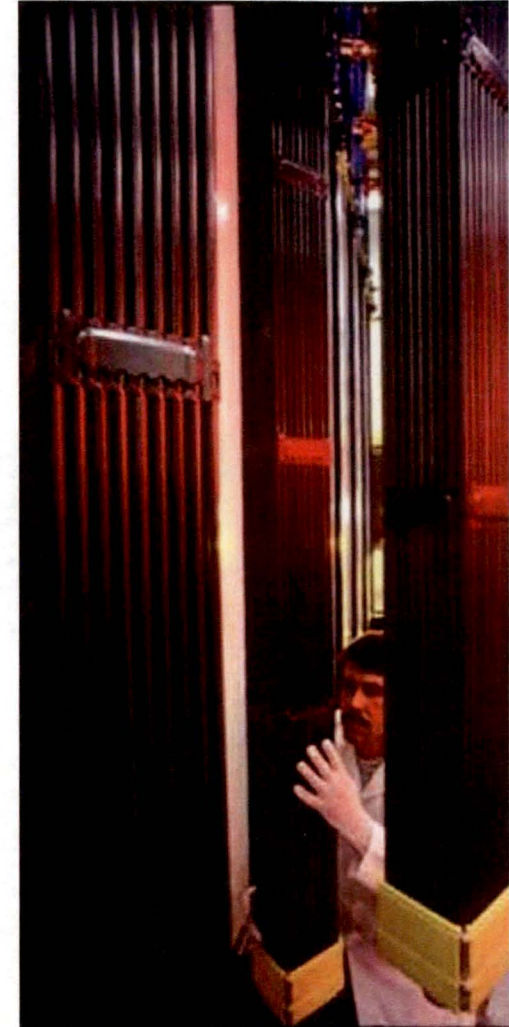
- Laser enrichment facility – GE Hitachi in
Wilmington, NC

- Deconversion of depleted Uranium --
International Isotopes in Hobbs, NM



Fuel Fabrication

- To produce low-enriched uranium packaged as fuel
- Input: Low-enriched UF_6 in 30-B Cylinders (2.5 tons)
- Product: Uranium dioxide (UO_2) ceramic pellets in fuel assemblies, 4 - 5% assay typically
- 3 U.S. commercial (LEU) fuel fabrication facilities currently operating



High-Enriched Uranium (HEU)

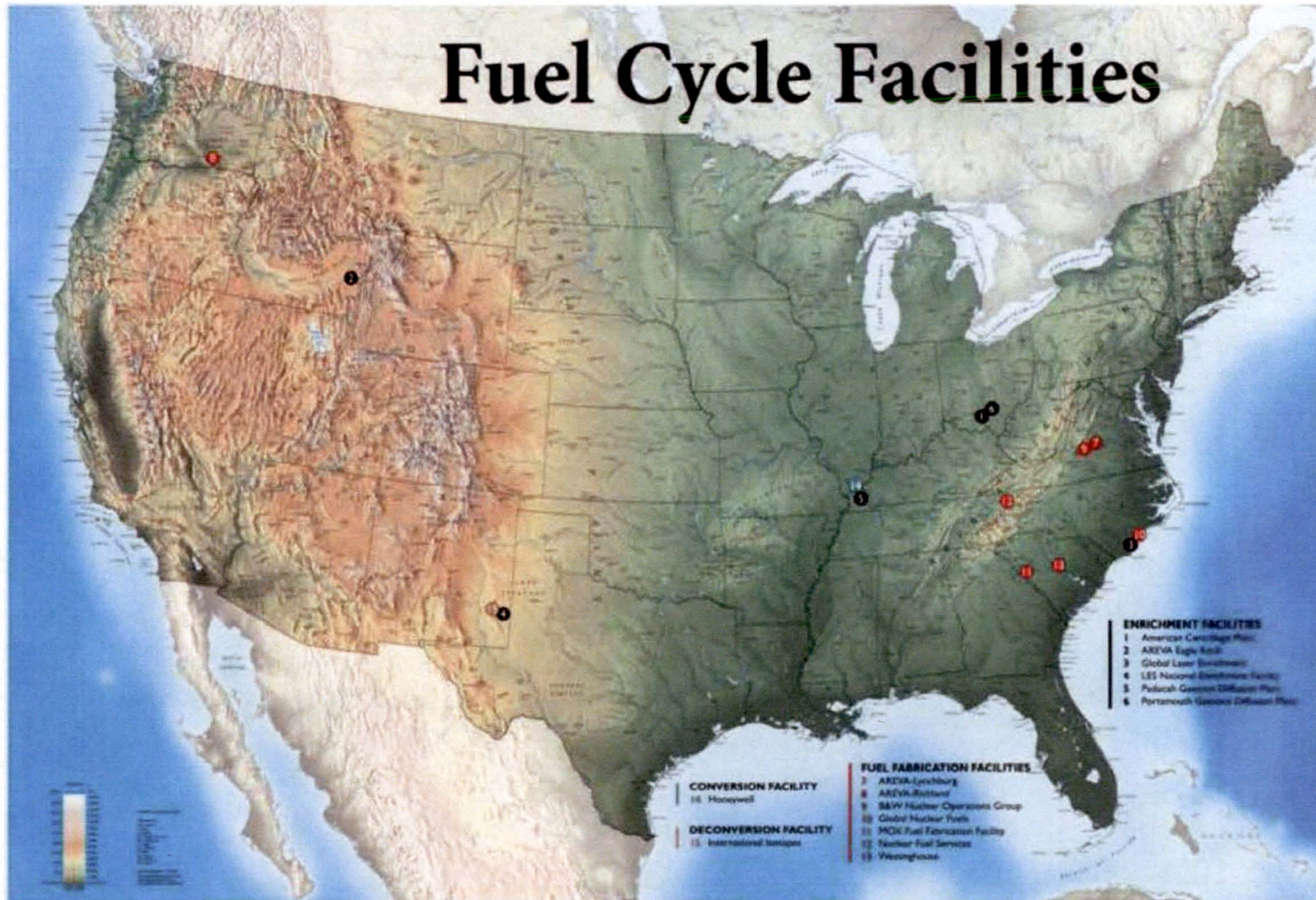
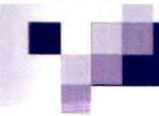
- HEU enrichment typically involves > 90 wt % ^{235}U
- NRC licenses two HEU fuel facilities
- Support naval nuclear propulsion program and research reactors
- No current enrichment program for HEU



The Rest of the Fuel Cycle

- Mixed (U+Pu) Oxide (MOX) fuel
 - MOX fuel fabrication facility being constructed
 - Test assemblies “burned” in an existing commercial light-water reactor





Major U.S. Fuel Cycle Facilities

Licensee/Facility	Location	Type
AREVA NP, Inc. (Decommissioning)	Lynchburg, VA	Uranium Fuel Fabrication
AREVA NP, Inc.	Richland, WA	Uranium Fuel Fabrication
Babcock & Wilcox Nuclear Owners Group BWX Technologies Nuclear Products Division	Lynchburg, VA	Uranium Fuel Fabrication
Global Nuclear Fuel-Americas, LLC	Wilmington, NC	Uranium Fuel Fabrication
Honeywell International, Inc.	Metropolis, IL	Uranium Hexafluoride Production (Conversion)
Louisiana Energy Services National Enrichment Facility (begun initial operations, construction continues)	Eunice, NM	Gas Centrifuge Uranium Enrichment
Nuclear Fuel Services, Inc.	Erwin, TN	Uranium Fuel Fabrication
Shaw AREVA MOX Services, LLC Mixed Oxide Fuel Fabrication Facility (in construction)	Aiken, SC	Mixed-Oxide Fuel Fabrication
U.S. Enrichment Corporation Paducah GDP	Paducah, KY	Gaseous Diffusion Uranium Enrichment
U.S. Enrichment Corporation Portsmouth GDP (cold shutdown)	Piketon, OH	Gaseous Diffusion Uranium Enrichment
USEC Lead Cascade and American Centrifuge Plant (under construction)	Piketon, OH	Gas Centrifuge Uranium Enrichment
Westinghouse Electric Company, LLC Columbia Fuel Fabrication Facility	Columbia, SC	Uranium Fuel Fabrication

Part 40 Facilities Effluent Reporting

- Applicable FCFs: Honeywell MTW (40-3392)
- Reporting Frequency: Semiannually per 10 CFR 40.65
- Sample Facility: Honeywell MTW (6 mo)
- Typical Gas Effluents: Typical Liquid Effluents:
 - Uranium (Nat.) 10^{-2} Ci 10^{-1} Ci
 - ^{226}Ra 10^{-5} Ci 10^{-3} Ci
 - ^{230}Th 10^{-4} Ci 10^{-3} Ci
- Example Reports in ADAMS: ML102460374;
ML100630663

Part 70 Facilities Effluent Reporting

- Applicable FCFs: AREVA NP Lynchburg (70-1201), AREVA Richland (70-1257), B&WNOG Lynchburg (70-1113); GNF Wilmington (70-1113; 70-7016); **LES Eunice (70-3103)**; NFS Erwin (70-3098); **USEC ACP Portsmouth (70-7004)**; WEC Columbia (70-1151)
- Reporting Frequency: Semiannually per 10 CFR 70.59
- Sample Facility: GNF (6 mo)
- Typical Gas Effluents:

□ ^{234}U 10^{-6} Ci	□ 10^{-2} Ci
□ ^{235}U 10^{-7} Ci	□ 10^{-4} Ci
□ ^{236}U 10^{-8} Ci	□ 10^{-5} Ci
□ ^{238}U 10^{-7} Ci	□ 10^{-3} Ci
- Typical Liquid Effluents:
- Example Reports in ADAMS: ML110420257; ML102380226

Part 76 Facilities Effluent Reporting

- Applicable FCFs: USEC: Paducah Gaseous Diffusion Plant (70-7001), Portsmouth Gaseous Diffusion Plant (70-7002)
- Reporting Frequency: Upon renewal per 10 CFR 76.35 (~ every 5 years)
- Sample Facility: USEC: Paducah GDP
- Typical Gas Effluents:

<input type="checkbox"/> U:	1.5×10^{-2} Ci/y
<input type="checkbox"/> ⁹⁹ Tc	1×10^{-2} Ci/y
<input type="checkbox"/> ²³⁰ Th:	3×10^{-5} Ci/y
<input type="checkbox"/> ²³⁷ Np:	2×10^{-4} Ci/y
<input type="checkbox"/> ^{239/240} Pu:	1×10^{-6} Ci/y

Typical Liquid Effluents:

10 ug/l U (Nat.) ²³⁵ U 0.2 wt. %,
10 pCi/l
0.1 pCi/l
0.1 pCi/l
0.1 pCi/l
- Example Reports in ADAMS: ML081070229; ML071490110; ML070610332

QUESTIONS

From: Crowley, Kevin
Sent: 26 Oct 2010 22:09:01 -0400
To: Brock, Terry
Subject: Voice mail

Terry:

Sorry I missed your call. I will try to reach you in the morning.

Kevin

Kevin D. Crowley, PhD
NRSB/National Academies
202-334-3066; kcrowley@nas.edu

From: Kosti, Ourania
Sent: 10 Jun 2011 11:51:09 -0400
To: Brock, Terry
Subject: WEBCAST stats

Feb. 24, 2011

<http://www.tvworldwide.com/events/nas/110224>

1672 unique visitors

April 18, 2011

<http://www.tvworldwide.com/events/nas/110418>

4873 unique visitors

May 23, 2011

<http://www.tvworldwide.com/events/nas/110523>

6097 unique visitors

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Kosti, Ourania
Sent: 29 Mar 2011 08:47:35 -0400
To: Brock, Terry;Shaffer, Vered
Subject: webcast views

Terry and Vered,

I wanted to share with you that we had 2983 views of your Feb. 24th webcast. That shows that there is great interest on the project!

Hope all is well –
Rania

Ourania (Rania) Kosti, Ph.D.
Program Officer
Nuclear and Radiation Studies Board
The National Academies
500 Fifth Street, NW
Washington, DC 20001
phone: 202 334 3066
fax: 202 334 3077
email: okosti@nas.edu

From: Coffin, Stephanie
Sent: 29 Jul 2015 10:53:08 -0400
To: Armstrong, Kenneth; Rini, Brett; Brock, Terry
Subject: RE: query/urgent - User Need for Update to Cancer Risk Study

It sure does, thanks Ken

From: Armstrong, Kenneth
Sent: Wednesday, July 29, 2015 10:17 AM
To: Coffin, Stephanie; Rini, Brett; Brock, Terry
Subject: RE: query/urgent - User Need for Update to Cancer Risk Study

Stephanie,

I am not aware of a global user need, just [NSIR-2007-001](#), which multiple Offices signed including:

- NSIR
- NRO
- NRR
- Region I and
- OPA

This user need request is different than our normal process due to the level in which it was circulated and concurred upon.

Does that help?

From: Coffin, Stephanie
Sent: Wednesday, July 29, 2015 9:25 AM
To: Armstrong, Kenneth; Rini, Brett; Brock, Terry
Subject: query/urgent - User Need for Update to Cancer Risk Study

I can't find this in ADAMS or in the Op Plan.

I did find a User Need from NSIR in the Op Plan but I thought we have a global one that was written.

Need it to finish this darn paper.

From: Burnell, Scott
Sent: 8 Sep 2015 11:57:08 -0600
To: Brock, Terry;Sheehan, Neil;Hannah, Roger;Ledford, Joey;Mitlyng, Viktoria;Chandrathil, Prema;Dricks, Victor;Uselding, Lara
Subject: Re: Question re: cancer study

Thanks Terry!

Sent from an NRC Blackberry
Scott Burnell

(b)(6)

From: Brock, Terry
Sent: Tuesday, September 08, 2015 01:55 PM
To: Burnell, Scott; Sheehan, Neil
Subject: RE: Question re: cancer study

\$1.5 M
Phase 1 : \$1 M
Phase 2 Pilot Planning: \$0.5 M

From: Burnell, Scott
Sent: Tuesday, September 08, 2015 1:33 PM
To: Sheehan, Neil; Brock, Terry
Subject: Re: Question re: cancer study
Importance: High
Terry, what's the \$ figure to date?

Sent from an NRC Blackberry
Scott Burnell

(b)(6)

From: Sheehan, Neil
Sent: Tuesday, September 08, 2015 01:11 PM
To: Burnell, Scott
Subject: Question re: cancer study

Scott,
I've been asked how much the agency has spent to date on the study. Do you have that? I didn't see it in the comm plan or SECY paper.
Neil

From: Burnell, Scott
Sent: 28 May 2015 10:27:09 -0400
To: Brock, Terry
Subject: Re: Question re paper

Thanks!

Sent from an NRC Blackberry
Scott Burnell

(b)(6)

----- Original Message -----

From: Brock, Terry
Sent: Thursday, May 28, 2015 10:26 AM
To: Burnell, Scott
Subject: RE: Question re paper

Yes, NCRP has already done it in their proof of concept to me. They can easily do any new sites using the original methods.

-----Original Message-----

From: Burnell, Scott
Sent: Thursday, May 28, 2015 10:24 AM
To: Brock, Terry
Subject: Question re paper

Would the alternative cover NFS in any way?

Sent from an NRC Blackberry
Scott Burnell

(b)(6)

From: Burnell, Scott
Sent: 26 Mar 2015 15:03:20 -0400
To: r johnson
Subject: RE: Question regarding funding for the National Academy of Sciences cancer study Phase 2

Hello Dr. Johnson;
The staff continues to consider the NAS proposal. The staff expects to update the Commission on a path forward later this spring. Thank you.

Scott Burnell
Public Affairs Officer
Nuclear Regulatory Commission

From: r johnson [mailto:r66nj@yahoo.com]

Sent: Wednesday, March 25, 2015 4:50 PM

To: Burnell, Scott

Subject: Question regarding funding for the National Academy of Sciences cancer study Phase 2

Dear Scott Burnell,

I wonder if you could provide me with an update regarding funding for the rest of the Phase 2 cancer study proposed by the National Academy of Sciences. My understanding is that their report came out in December and was submitted to the USNRC in January for funding of the execution phase. I would appreciate any information about when the NRC plans to make its decision, and in the mean time is there any reason why they would not fund this important study?

Many thanks,

Roger Johnson, PhD
Professor Emeritus
San Clemente, CA
R. Johnson

From: Coffin, Stephanie
Sent: 17 Jun 2015 13:37:46 -0400
To: Sun, Casper;Pope, Tia;Brock, Terry
Cc: Tadesse, Rebecca
Subject: RE: re: Where is the NSIR memo and report
Attachments: Habitability memo

Tia provided me with a concurrence package a week or two ago. She wasn't sure if all comments had been addressed, so I gave her a hard copy of the "redline/strikeout" files I sent earlier to Rebecca. I asked Tia to review them and if she had any remaining questions or concerns to talk with Terry (who was acting RPB BC as Rebecca was out of the office at the time).

I've concurred with comment, so assuming all the changes have been made and comments have been addressed, we are good to issue the division-level memo.

Hope you find it!

From: Sun, Casper
Sent: Thursday, June 11, 2015 11:28 AM
To: Pope, Tia; Brock, Terry
Cc: Coffin, Stephanie; Tadesse, Rebecca
Subject: RE: re: Where is the NSIR memo and report

Dear All,

Could you please let me know where are the NSIR closeout memo and the associated final non-rad habitability findings and recommendations report.

We all have worked so hard on the papers, I hope they are not put in your recycle bin.

Thank you so much,

Casper

From: Sun, Casper
Sent: Thursday, June 04, 2015 2:48 PM
To: Pope, Tia
Cc: Coffin, Stephanie
Subject: re: Where is the NSIR memo and report

Dear Tia,

Stephanie is asking me where is the NISR memo and report on "Non-Rad Habitability".

Could you please get back to her ASAP.

Thank you,

Casper

From: Coffin, Stephanie
Sent: 11 May 2015 15:31:47 +0000
To: Pope, Tia
Cc: Tadesse, Rebecca
Subject: Habitability memo

Tia

I forgot to initial my concurrence in this package

I "concurred with comment" and gave my comments to rebecca to review and ensure they make sense.

Wanted you to have it officially for your package

If it gets done this week Pat or Rebecca can sign for Mike on the cover memo

Thanks
Stephanie

Sent from an NRC blackberry
Stephanie Coffin

(b)(6)

From: Burnell, Scott
Sent: 10 Sep 2015 14:20:36 -0400
To: Teri Sforza
Cc: Dricks, Victor; Uselding, Lara
Subject: RE: RE: RE: [External_Sender] RE: REPORT ON CANCER CLUSTERS SURROUNDING DIABLO CANYON NUCLEAR PLANT -World Business Academy
Attachments: SECY 15_0104.pdf

Hi Teri;

The effort actually started in 2007, but yes, the first contract with NAS was signed in 2010. Could you clarify your question regarding Commissioner turnover? The study has always been a staff-driven effort.

As I said, the NCI study, combined with the evidence from ongoing monitoring of plant performance and the nearby environment, leads the NRC to the conclusion that low offsite doses are too small to generate an observable increase in cancer risk near the facilities. That being said, the staff paper (attached) does note on page 4 that a proposal to "refresh" the NCI study with modern information would "have the same limitations as the 1990 study (county-based and primarily examining only mortality rates)."

The staff paper also addresses overseas studies on page 2.

Thanks.

Scott

From: Teri Sforza [mailto:tsforza@ocregister.com]
Sent: Thursday, September 10, 2015 12:48 PM
To: Burnell, Scott
Subject: [External_Sender] RE: RE: [External_Sender] RE: REPORT ON CANCER CLUSTERS SURROUNDING DIABLO CANYON NUCLEAR PLANT -World Business Academy

Thanks, Scott.

Couple of housekeeping items: The study was requested in 2010 under Jaczko, if I'm not mistaken? How much turnover on the Commission has there been since then?

Talking with the NAS folks, the 1990 study that the NRC feels adequately addresses questions remains extremely flawed from a scientific standpoint (as it uses broad county data and depends on mortality stats, which are "very blunt instruments" for this sort of inquiry). You sort of get at this but forgive me for repeating: The NRC is satisfied that what we have is enough? (I know the NRC tracks safety quite closely, but obviously tying releases etc to human health in close proximity has not been done in US) NAS also still concerned about the French and German studies finding two-fold increases in childhood leukemia near plants. Those do not prove causality, but raise more questions. NRC not similarly prodded by these studies?

Teri Sforza

The Orange County Register

tsforza@ocregister.com

(b)(6)

From: Burnell, Scott [mailto:Scott.Burnell@nrc.gov]
Sent: Thursday, September 10, 2015 6:02 AM
To: Teri Sforza
Cc: Dricks, Victor; Uselding, Lara; 'LRugani@nas.edu'
Subject: RE: RE: [External_Sender] RE: REPORT ON CANCER CLUSTERS SURROUNDING DIABLO CANYON NUCLEAR PLANT -World Business Academy

Hi Teri;

It's simply not practical for the NRC to continue work on the study, given the time and cost, as well as these factors:

The NAS Phase I report included the caveat that the effort "may not have adequate statistical power to detect the presumed small increases in cancer risks arising from... monitored and reported releases." The pilot study's estimated 39 months and \$8 million had one aim -- validating the research methods described in the NAS Phase I report. The Phase II report explicitly stated that "any data collected during the pilot study will have *limited use for estimating cancer risks* in populations near each of the nuclear facilities or for the seven nuclear facilities combined because of the imprecision inherent in estimates from small samples." [emphasis mine] Anyone suggesting the \$8 million would have provided useful risk numbers should re-read the NAS reports. Another unanswered question would be, given a successful pilot study, how much time and cost would then go into analyzing at least an additional 50 sites?

These uncertainties, when considered alongside the significant time and resources estimated to carry out the pilot study, contributed to the decision against continuing the project.

U.S. nuclear power plants HAVE been tracked over time, through inspectable requirements to monitor releases from the plants, as well as regular sampling of the environment for analysis by the NRC and state agencies (<http://www.nrc.gov/reactors/operating/ops-experience/tritium/plant-info.html>). The NAS reviewed that information in its Phase I study, and the panel decided the proposed study methods would not calculate sample sizes based on actual off-site doses. To the NRC staff, that decision is in line with the NRC's conclusion that the low offsite doses are too small to generate an observable increase in cancer risk near the facilities.

The NRC agrees that the Academies' panels proposed scientifically sound methods, and the NAS Phase I and II reports are publicly available for anyone interested in those approaches.

Thanks.

Scott

From: Teri Sforza [<mailto:tsforza@ocregister.com>]

Sent: Wednesday, September 09, 2015 8:08 PM

To: Burnell, Scott <Scott.Burnell@nrc.gov>

Cc: Dricks, Victor <Victor.Dricks@nrc.gov>; Uselding, Lara <Lara.Uselding@nrc.gov>;

'LRugani@nas.edu' <LRugani@nas.edu>

Subject: [External_Sender] RE: [External_Sender] RE: REPORT ON CANCER CLUSTERS SURROUNDING DIABLO CANYON NUCLEAR PLANT -World Business Academy

Thanks Scott. I'm finding this for estimated costs for the pilot:

NAS communicated to the staff that the execution phase of the pilot study would require significant time and resources to complete: **39 months and \$8 million**. The staff estimates that it may take NAS 8 to 10 years to complete the pilot and the subsequent nation-wide studies before NRC has final cancer risk results to share with NRC stakeholders—the original intent of the project. That would possibly prolong the study to 2025, 15 years after the start of the project with NAS.

So time and money are the issues? It strikes some of our more vocal types that \$8 million doesn't seem like much in the federal budget.

The other thing I'm hearing from folks is, "the 1990 study is the best American science can do?"

Methods, and understanding, have sure changed a lot over the past 25 years. The NRC is satisfied that what we have is enough?

And there's some conspiracy theorists saying that, because this study would have been able to track plants over time, it got the kibosh. Could you guys address that murmuring?

Is there any plan/hope/aspiration for any other scientific approach to this, what with license extensions and some new plants going up? What next?

We can chat or we can do it by email - your call. Thanks.

Teri Sforza
The Orange County Register
tsforza@ocregister.com

(b)(6)

From: Burnell, Scott [<mailto:Scott.Burnell@nrc.gov>]
Sent: Wednesday, September 09, 2015 2:04 PM
To: Teri Sforza
Cc: Dricks, Victor; Uselding, Lara; 'LRugani@nas.edu'
Subject: Re: [External_Sender] RE: REPORT ON CANCER CLUSTERS SURROUNDING DIABLO CANYON NUCLEAR PLANT -World Business Academy

Hi Teri;

The work on this since 2010 has totalled \$1.5 million. I can talk to you tomorrow or we can do e-mail questions. Thanks.

Scott

Sent from an NRC Blackberry
Scott Burnell

(b)(6)

From: Teri Sforza [<mailto:tsforza@ocregister.com>]
Sent: Wednesday, September 09, 2015 05:02 PM
To: Burnell, Scott
Cc: Dricks, Victor; Uselding, Lara; Rugani, Lauren (LRugani@nas.edu) <LRugani@nas.edu>
Subject: [External_Sender] RE: REPORT ON CANCER CLUSTERS SURROUNDING DIABLO CANYON NUCLEAR PLANT -World Business Academy

Hey folks - There's lots of fear and loathing and conspiracy talk over the cancellation of the study - I'm trying to get a total on what has been spent so far, and talk to someone in real time about all this tomorrow - help?!

Teri Sforza
The Orange County Register
tsforza@ocregister.com

(b)(6)

From: Burnell, Scott [<mailto:Scott.Burnell@nrc.gov>]
Sent: Thursday, March 27, 2014 1:11 PM
To: Teri Sforza
Cc: Dricks, Victor; Uselding, Lara; Rugani, Lauren (LRugani@nas.edu)
Subject: RE: REPORT ON CANCER CLUSTERS SURROUNDING DIABLO CANYON NUCLEAR PLANT - World Business Academy

Hi Teri;

The documents in the original e-mail are all labeled March 3 – month-old stuff is now “breaking?” Interesting.

If those documents were actually submitted to the agency for any regulatory purpose our staff would examine the work it to see if it had any scientific validity.

The NRC continues to monitor of the environment around Diablo Canyon. That monitoring shows the plant is meeting strict NRC standards that ensure the public could not receive any appreciable radiation dose from radioactive material the plant might emit.

Apart from that, you might want to consider what other journalism outlets have said about Mangano's methods, including Scientific American (<http://blogs.scientificamerican.com/observations/2011/06/21/are-babies-dying-in-the-pacific-northwest-due-to-fukushima-a-look-at-the-numbers/> and <http://blogs.scientificamerican.com/observations/2011/12/20/researchers-trumpet-another-flawed-fukushima-death-study/>) and the Annenberg J-school over at USC, which took a look at another iteration of the earlier Mangano piece (<http://www.reportingonhealth.org/blogs/2011/12/20/fukushima-alarmist-claim-obscure-medical-journal-proceed-caution>).

The California Department of Health would likely be in the best position to discuss overall state cancer statistics.

Lauren Rugani over at the National Academies is your contact for next week's meeting, of course.

Let me know if you need anything else.

Scott

From: Teri Sforza [<mailto:tsforza@ocregister.com>]

Sent: Thursday, March 27, 2014 3:27 PM

To: Burnell, Scott; Dricks, Victor

Subject: FW: REPORT ON CANCER CLUSTERS SURROUNDING DIABLO CANYON NUCLEAR PLANT - World Business Academy

Hi guys -- Teri Sforza from the OC Register here to bother you again. Will be advancing the NAS meeting on the cancer study next Thursday in Irvine -- and quite interesting timing on this report on Diablo. I know the author has been savaged by the industry for past reports of this type -- hoping you might share some insight/wisdom/comment on the scientific rigorousness of it?

Teri Sforza

The Orange County Register

tsforza@ocregister.com

(b)(6)

From: Mizuno, Beth
Sent: 9 May 2012 12:35:22 -0400
To: Brock, Terry
Subject: RE: REMINDER RE: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

Thanks, Terry. There are no comments from OGC.

From: Brock, Terry
Sent: Tuesday, May 08, 2012 11:29 AM
To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott
Subject: REMINDER RE: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

Hi All, this is a friendly reminder that all comments on the NAS Phase 1 cancer study are due one week from today on Tuesday, May 15.

Thanks for your review and let me know if you have any questions.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Brock, Terry
Sent: Wednesday, April 25, 2012 3:04 PM
To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott
Subject: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

All,

RES sent out the official memo requesting comments on the NAS Phase 1 cancer study report to your respective offices with a new due date of Tuesday, May 15.

Thanks for your continued support,

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research

U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Brock, Terry
Sent: Thursday, April 12, 2012 12:07 PM
To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott
Subject: REQUEST: review and comment on the NAS Phase 1 Cancer Risk Study

All,

This is a heads-up that RES will be sending out a formal memo request for review and comment on the NAS Phase 1 Cancer Risk Study in the next couple of days. You all have been identified as the POC for your organizations in the memo. We're asking for comments back by Monday, May 7, 2012. Once I get the comments I'll put a meeting together to talk about next steps.

The NAS report, "Analysis of Cancer Risks in Populations near Nuclear Facilities: Phase I" is available in ADAMS at ML120860057 .

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Nimitz, Ronald
Sent: 9 May 2012 14:23:41 -0400
To: Brock, Terry
Subject: RE: REMINDER RE: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

Terry..
Some quick comments.. still looking..
Got it ..finished reading
Wow.. what a read.. !!
Seems to provide very good technical bases for methods selected as well as evaluation and critique of previous studies (not clear on Wing TMI study), as well of potential/likely statistical problems.

Do you have anyone's comments yet ??

I am still looking but some items jump out.

- 1) Not sure why using ocean based plants since ~ 50 % of population not present. If do go to select one of these for a potential Phase II may be of limited usefulness for full study
- 2) Seems to dismiss multi-unit sites.. but these may be good because of the additional releases to population overlaps and usually one utility. Would it be better to pre-identify those plants (as done in report) with above average releases and go with those (assuming population and data is available) Would have higher releases/dose.
- 3) Need to get (calculate) absorbed dose as well as meteorological data .. maybe should pre-identify plants with good met data based on reviews of annual reports and co-select those with item 2 plants provided can get good statistical power
- 4) Note that some of the northeast plant near decommissioned fuel fabrication facilities.. Westinghouse Apollo Pittsburgh, B&W in Conn..

NRC will be participating in a REMP/RETS meeting this June (end of June) (Orlando) may be good to go down and discuss explain this and get buy in and maybe some feed back on possible ideas for good data. Rich Conatser and I are going.

ron

ron

-----Original Message-----

From: Brock, Terry
Sent: Wednesday, May 09, 2012 10:10 AM
To: Nimitz, Ronald
Subject: RE: REMINDER RE: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

Should be the correct ml. Try and download the PDF from the study website here <http://dels.nas.edu/nrsb>

From: Nimitz, Ronald
Sent: Wednesday, May 09, 2012 9:04 AM
To: Brock, Terry
Subject: RE: REMINDER RE: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

Terry.. I am working at home because of the Region I office move.. I am trying to access the cancer Phase I for review but can not access via the ML number.. is it correct..??

I can access the NRC web site etc. but can not get via the public or NRC web page..

ron

From: Brock, Terry
Sent: Tuesday, May 08, 2012 11:29 AM
To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott
Subject: REMINDER RE: REQUEST: NEW DUE DATE review and comment on the NAS Phase I Cancer Risk Study

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Thanks for your review and let me know if you have any questions.

Terry

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Office of Nuclear Regulatory Research
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To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott
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Terry

Terry Brock, Ph.D.
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Mail Stop CSB-3A07
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Sent: Thursday, April 12, 2012 12:07 PM

To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott
Subject: REQUEST: review and comment on the NAS Phase 1 Cancer Risk Study

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Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Case, Michael
Sent: 9 Jun 2015 06:58:54 -0400
To: Coffin, Stephanie;Tadesse, Rebecca;Brock, Terry
Subject: RE: REPLY - cancer study funding

I might reword the first sentence to read: We believe that we can support this study if budgeted resource planned for the project are around \$500K per year. and then I tweaked a sentence down below in blue.

From: Coffin, Stephanie
Sent: Monday, June 08, 2015 4:13 PM
To: Case, Michael; Tadesse, Rebecca; Brock, Terry
Subject: REPLY - cancer study funding
Importance: High

**Hey guys – please comment on the proposed email for Brian to send to Mike W.
Thanks! Steph**

Mike,

Thanks for your feedback at last Friday's pre-brief of the Commissioners' Assistants briefing for the "next steps" in the analysis of cancer risks.

We'd like to move forward with the NCRP approach as described in that briefing. The offices that initiated the User Need that requested this study (e.g., NRR, Region I, OPA, NSIR, etc.) remain very supportive of this work.

You are right about the fiscal constraints. So based on your comment, we put our heads together to look at the funding picture to see what we could realistically accomplish.

We believe we can support this study at a cost of about \$500K/year. The Radiation Protection program in RES has a large enough portfolio to support a project of this size over the course of several years, even within the current (declining) fiscal environment. Currently there is about \$300K in the FY17 budget for this work. When we reevaluate the work completed and the new work identified for the Radiation Protection program in the context of the FY 18 budget, RES may be able to provide the \$200K difference. This would allow the project to start in FY17.

Getting the project "off the ground" is the hard part – once it is going, I think we'll have the support to continue.

This would mean the project would take a little longer than we are current projecting (an additional 1-2 years). We still think it is worthwhile pursuing to see if we can't get this going in FY17. If we can't, then we'll throw in the towel.

Let me know if you support,

Brian

From: Coffin, Stephanie
Sent: 29 Jul 2015 09:04:25 -0400
To: Chen, Yen-Ju
Cc: Case, Michael; Brock, Terry; Tadesse, Rebecca
Subject: RE: reply - possible times for CA brief on Cancer Study

Whoops

See changes below

I need to take better notes

From: Coffin, Stephanie
Sent: Wednesday, July 29, 2015 9:00 AM
To: Chen, Yen-Ju
Cc: Case, Michael; Brock, Terry; Tadesse, Rebecca
Subject: reply - possible times for CA brief on Cancer Study

Brian has openings next week as follows:

Weds August 5th – anytime between 9 am and 3 pm

Thurs August 6th – ~~anytime between 9 am and 1 pm; also free between 2 and 3 pm~~ **free from 1 – 2 pm; also 3 – 4 pm**

Fri August 7th – ~~anytime between 10 am and 1 pm~~ **free from 8 to 10 am; also 1 to 2 pm; also free after 2 pm but it is FRIDAY ☺**

Thirty minutes should suffice

From: Milligan, Patricia
Sent: 17 Aug 2015 11:08:08 -0400
To: Ramirez, Lisa;Williams, Vince;Brock, Terry
Cc: Sherbini, Sami;Huffert, Anthony
Subject: RE: Requesting assistance on an Inquiry from audience on Special Lecture on Fukushima Disaster

It does occur to me, however, that blood is irradiated at very high levels, so maybe moving blood should occur when doses are in excess of the doses for sterilization? Doses used for sterilization purposes are generally ranges from 25 to 50 Gy. Since blood is sealed there are no concerns with contamination of the actual blood; external contamination can be readily removed.

From: Milligan, Patricia
Sent: Monday, August 17, 2015 10:45 AM
To: Ramirez, Lisa ; Williams, Vince ; Brock, Terry
Cc: Sherbini, Sami ; Huffert, Anthony
Subject: RE: Requesting assistance on an Inquiry from audience on Special Lecture on Fukushima Disaster

The blood may have been moved during the Fukushima response due to power failures as a result of earthquake damage rather than directly as a result of radiation. There have been a number of disasters where loss of power has impacted the viability of stored blood in blood banks. Having said that, I don't have an answer for the dose that would impact blood. I will ask colleagues at NIH

Trish

From: Ramirez, Lisa
Sent: Wednesday, August 12, 2015 5:31 PM
To: Williams, Vince <Vince.Williams@nrc.gov>; Brock, Terry <Terry.Brock@nrc.gov>
Cc: Milligan, Patricia <Patricia.Milligan@nrc.gov>; Sherbini, Sami <Sami.Sherbini@nrc.gov>; Huffert, Anthony <Anthony.Huffert@nrc.gov>
Subject: Requesting assistance on an Inquiry from audience on Special Lecture on Fukushima Disaster

Dear Vince, Terry, Patricia, and Sami,

Tony Huffert suggested that I contact you. At a recent NIH lecture on the 2014 Fukushima accident, distributed to the NRC HP Community, a question was asked from the NRC Japan Lessons Learned Division. The question is summarized below:

“A question was raised as to whether blood in blood banks, located within an evacuation zone during a nuclear emergency, should be moved or not moved. The concern is whether blood is sufficiently sheltered in their normal storage to avoid impact from the passing plume? Reportedly, blood in blood banks were moved during the Fukushima response. This may have resulted in moving blood from where it was needed locally.”

Is there an existing FAQ on this topic at the NRC or other reputable information sources?

If not, would you mind providing your input on the proposed FAQ below?

Q: Should blood stored in blood banks be moved during response to an emergency at a nuclear power plant?

A: The decision to move blood, based on actual or projected ambient radiation levels at a blood bank location, would depend on local radiation levels during plume passage (cloud shine and submersion in the plume) and subsequent plume deposition on the ground and buildings. The radiation levels required to cause change in blood stored in a blood bank that are sufficient to make them unusable for the general population, are on the order of [XX rem (XX gray)]. These radiation levels are unlikely to be encountered during a nuclear power plant accident at nearby

locations. Similarly, airborne radioactivity or surface contamination that may come in contact with bags of blood stored in a blood bank are unlikely to cause changes in the blood from exposure to external radiation.

Any assistance with the above participant's question would be appreciated. Thank you in advance for your time and assistance.

Sincerely,

Lisa Ramirez

Lisa M. Ramirez, Ph.D. | Health Physicist
Office of Nuclear Regulatory Research | U.S. Nuclear Regulatory Commission
301-415-1803 (work) | 301-415-6671 (fax)
Lisa.Ramirez@nrc.gov



From: Gibson, Lauren

Sent: Thursday, July 16, 2015 2:45 PM

To: Ramirez, Lisa

Subject: RE: FW: Special Lecture on Fukushima Disaster - July 16, 2015 (12-1 p.m.)

Hi Lisa,

I went to the lecture, and I found it be very informative and interesting.

There was one issue that Dr. Nollet mentioned that piqued my interest and seems to have a real-life impact. I am not a health physicist nor a medical doctor, so maybe you know who I should ask.

Should the blood in blood banks within an evacuation zone be moved, or are they sufficiently sheltered in their normal storage that there is not a danger from the passing plume? In Japan, they moved the blood, which in effect meant that they moved it away from where it was most needed.

Thank you,

Lauren

Lauren K. Gibson

Project Manager

Policy and Support Branch

Japan Lessons Learned Division

(301) 415-1056

From: Ramirez, Lisa

Sent: Monday, July 13, 2015 4:29 PM

To: Gibson, Lauren

Subject: RE: FW: Special Lecture on Fukushima Disaster - July 16, 2015 (12-1 p.m.)

You are welcome, Lauren. I may also attend as well. I am glad it will be of use to you.

Sincerely,

Lisa

Lisa M. Ramirez, Ph.D. | Health Physicist
Office of Nuclear Regulatory Research | U.S. Nuclear Regulatory Commission
301-415-1803 (work) | 301-415-6671 (fax)
Lisa.Ramirez@nrc.gov



From: Gibson, Lauren

Sent: Monday, July 13, 2015 4:26 PM

To: Ramirez, Lisa

Subject: RE: FW: Special Lecture on Fukushima Disaster - July 16, 2015 (12-1 p.m.)

Thanks, Lisa. I currently work in the Japan Lessons Learned Division and will be attending.

Lauren

Lauren K. Gibson

Project Manager

Policy and Support Branch

Japan Lessons Learned Division

(301) 415-1056

From: Ramirez, Lisa

Sent: Monday, July 13, 2015 2:46 PM

To: Reed, Elizabeth; Broaddus, Doug; Brock, Kathryn; Brown, David; Camper, Larry; Carrera, Andrew; Chapman, Gregory; Clements, John; Compton, Keith; Cook, John; Cool, Donald; Damon, Dennis; DeCicco, Joseph; Dehmel, Jean-Claude; Diaz, Marilyn; Dickson, Elijah; Dimmick, Lisa; Stutzcage, Edward; Figueroa, Gladys; Flannery, Cindy; Foster, Jack; Gambone, Kimberly; Goldfeiz, Eliezer; Gray, Anita; Hayes, John; Hinson, Charles; Howe, Donna-Beth; Hsueh, Kevin; Huffert, Anthony; Kowalczyk, Jeff; Jones, Andrea; Vazquez, Justin; Karagiannis, Harriet; Keegan, Elaine; Kock, Andrea; Gibson, Lauren; Lewis, Doris; Lohr, Edward; Markley, Anthony; Mattsen, Catherine; Maupin, Cardelia; McCraw, Aaron; McIntosh, Angela; McKenney, Christopher; Mike Boyd; Weber, Michael; MorganButler, Kimyata; Palmrose, Donald; Persinko, Andrew; Pstrak, David; Purdy, Gary; Quichocho, Jessie; Reber, Eric; Roach, Edward; Schmidt, Duane; Schneider, Kathleen; Sherbini, Sami; Snyder, Amy; Sollenberger, Dennis; Spackman, David; Sun, Casper; Tadesse, Rebecca; Tapp, Katherine; Tobin, Jennifer; Tomon, John; Watson, Bruce; Webb, James; White, Duane; White, Duncan; Ott, William; Abogunde, Maryann; Abu-Eid, Bobby; Baggett, Steven; Barr, Cynthia; Bartlett, Matthew; Benevides, Luis; Bernal-Taylor, Sara; Bloomer, Tamara; Blumberg, Mark; Brock, Terry; Burrows, Ronald; Burrows, Sheryl; Bush-Goddard, Stephanie; Call, Michel; Cassata, James; Cecere, Bethany; Clement, Richard; Conatser, Richard; Fisher, Jennifer; Ford, Monica; Gabriel, Sandra; Garry, Steven; Gibson, Kathy; Giebel, Stephen; Gran, Zachary; Hart, Michelle; Hernandez, Pete; Holahan, Patricia; Holahan, Vincent; Holiday, Sophie; Kellner, Robert; Thomas, Kenneth; Klementowicz, Stephen; Kurian, Varughese; LaVera, Ronald; LaVie, Steve; Longmire, Pamela; Lu, Shanlai; Lukes, Robert; Mamish, Nader; Cervera, Margaret; Markley, Michael; Humberstone, Matthew; McCoppin, Michael; Meighan, Sean; Milligan, Patricia; Naquin, Tyrone; Nick, Joseph; O'Donnell, John; Oxenberg, Tanya; Pedersen, Roger; Ramirez, Lisa; Rodriguez-Luccioni, Hector; Chazell, Russell; Saba, Mohammad; Sahle, Solomon; Daibes, Said; Hawkins, Sarenee; Schmitt, Ronald; Schneider, Stewart; Shaffer, Mark; Shaffer, Vered; Smethers, Michelle; Smith, Arthur; Smith, Micheal; Struckmeyer, Richard; Stuart Richards; Sullivan, Randy; Oxenberg, Tanya; Tapp, Jeremy; Taylor, Torre; Thaggard, Mark; Thompson, Shannon; Waters, Michael; Reed, Wendy; Whaley, Sheena; Williams, Stephen; Xu, Shirley; Yin, Xiaosong; Young, Thomas; Alldredge, Casey; Berkshire, Douglas; Bermudez, Hector; Bonano, Eugenio; Bonser, Brian; Bramnik, Andrew; Campbell, Vivian; Carson, Louis; Casey, Colleen; Cassidy, John; Cook, Jackie; Courtemanche, Steven; Diaz, Jose; Dickson, Billy; Dionne, Bruce; DNMSIII; Dykes, Carmen; Elliott, Robin; Bonano, Eugenio; Evans, Robert; Frazier, Cassandra; Furia, Joseph; Gaines, Anthony; Gaskins, Farrah; Gattone, Robert; Gepford, Heather; Gersey, Linda; Gibson, Richard; Gloersen, William; Go, Tony; Gordon, Craig; Graves, Chris; Greene, Natasha; Griffis, Jeff; Guerra, Gilbert; Hamilton, Ruben; Hammann, Stephen; Hammond, Michelle; Hanson, Latischa; Hays, Robert; Henderson, Pamela; Jackson, Todd; Katanic, Janine; Kauffman, Laurie; Kulzer, Edward; LaFranzo, Michael; Lambert, Kenneth; Lanzisera, Penny; Lawyer, Dennis; Learn, Matthew; Lee, Peter; Lodhi, Sattar; Loo, Wade; Lynn, Henry; Mahlahla, Latonya; Mitchell, Mark; Modes, Kathy; Munoz, Rick;

Murnahan, Colleen; Myers, Valerie; Nguyen, Janice; Nicholson, John; Nielsen, Adam; Nimitz, Ronald; Noggle, James; Null, Kevin; Parker, Bryan; Pelchat, John; Phalen, Martin; Piskura, Deborah; Poston-Brown, Martha; Pursley, William; Ragland, Randolph; Reichard, Michael; Reichhold, William; Ricci, John; Ricketson, Larry; Rivera, Jonathan; Roberts, Mark; Rodriguez, Lionel; Roldan, Lizette; Rolph, Ronald; Schlapper, Gerald; Seeley, Shawn; Simmons, Michelle; Simmons, Toye; Slawinski, Wayne; Stearns, Don; Taylor, Cynthia; Thomas, MaryLynne; Thompson, James; Torres, Roberto; Tran, Frank; Tripp, Lester; Ullrich, Elizabeth; Warren, Geoffrey; Weidner, Tara; White, John; Whitten, Jack; Wilson, Scott

Subject: FW: FW: Special Lecture on Fukushima Disaster - July 16, 2015 (12-1 p.m.)

Dear HP Community,

Enclosed is an off-site lecture on Fukushima this week (Thursday, July 16, 2015, 12-1 p.m.) at the NIH, which may be of interest to you.

“Lessons from Fukushima - Viewpoint of a front line physician”

Arifumi HASEGAWA, MD, PhD

Professor and Chairman, Department of Radiation Disaster Medicine
Fukushima Medical University

(Fukushima story in the context of transfusion medicine)

"From 9-11 to 3-11: A look at our past with a view toward the future."

Kenneth Nollet, MD, PhD

Department of Blood Transfusion and Transplantation Immunology

Director, Department of International Cooperation

Radiation Medical Science Center, Fukushima Medical University

(Focus on 3-11 disaster response)

Location: National Institute of Health (NIH), Clinical Center’s Department of Transfusion Medicine, DTM conference room (Bldg 10 Room 1C726 - near Blood Bank donor area).

July 16 (Thursday) from noon to 1 pm.

Non NIH badge-holders may enter through NIH Gateway Visitor’s Center (at the Medical Center Metro stop) and be issued a visitor’s ID.

Please see e-mails below for further information on the presentation, and how to access the NIH campus as a visitor.

Sincerely,

Lisa Ramirez

Lisa M. Ramirez, Ph.D. | Health Physicist

Office of Nuclear Regulatory Research | U.S. Nuclear Regulatory Commission

301-415-1803 (work) | 301-415-6671 (fax)

Lisa.Ramirez@nrc.gov



From: Ribaud, Cathy (NIH/OD/ORS) [E] [<mailto:ribaudoc@ors.od.nih.gov>]

Sent: Monday, July 06, 2015 11:03 AM

To: Noska, Michael A (FDA/OC); Modes, Kathy; Reed, Elizabeth; sean.austin@moellerinc.com; Scott, Carol (NIH/NLM/NCBI) [E]; Greg Hansen (Greg.Hansen@meleassociates.com); Baryoun, Adel (adel.baryoun@nist.gov); Bob Zoon

Subject: [External_Sender] FW: Special Lecture on Fukushima Disaster - July 16, 2015

Hi folks!

DTM has also asked me to forward the invitation for this talk to the NRC, so please spread the word to any and all appropriate parties. I’m also extending it to others of

you beyond the NRC, in the hopes that it may be of interest (although Mike, you could probably give your OWN talk!)

Feel free to forward this invite on to any others who may find it of interest.

If you're not already an NIH badge-holder, you'll just need to enter through the Gateway Visitor's Center (near the Medical Center Metro) and be issued a visitor's ID.

Hope you can make it!

Cathy

From: Ribaldo, Cathy (NIH/OD/ORS) [E]
Sent: Monday, July 06, 2015 10:25 AM
To: ORS DRS Staff
Subject: FW: Special Lecture on Fukushima Disaster - July 16, 2015

Hello DRS,

You are cordially invited by the Clinical Center's Department of Transfusion Medicine to attend this lecture. It will be held in the DTM conference room, which is Bldg 10 Room 1C726, near the Blood Bank donor area. July 16 (Thursday) from noon - 1 pm.

Hope you can make it!

Thanks,
Cathy

From: West, Kamille (NIH/CC/DTM) [E]
Sent: Monday, July 06, 2015 8:54 AM
To: Ribaldo, Cathy (NIH/OD/ORS) [E]
Cc: Flegel, Willy (NIH/CC/DTM) [E]
Subject: Special Lecture on Fukushima Disaster - July 16, 2015

Hello,

I am a clinical fellow in the department of Transfusion Medicine - I would like to invite the Division of Radiation Safety to a lecture we are hosting on Thursday July 16th, 2015 from 12:00 noon to 1:00pm.

œLessons from Fukushima - Viewpoint of a front line physicianœ

Arifumi HASEGAWA, MD, PhD

Professor and Chairman, Department of Radiation Disaster Medicine
Fukushima Medical University

"From 9-11 to 3-11: A look at our past with a view toward the future."

Kenneth Nollet, MD, PhD

Department of Blood Transfusion and Transplantation Immunology
Director, Department of International Cooperation
Radiation Medical Science Center, Fukushima Medical University

Dr. Nollet (an American Transfusion Medicine physician in Fukushima) will put the Fukushima story in the context of transfusion medicine, whereas Dr. Hasegawa will focus more exclusively on the 3-11 disaster response.

Please let me know if your group might be interested in attending this talk.

Thank you,

Kamille A. West, MD

Clinical Fellow

Department of Transfusion Medicine

NIH Clinical Center

Bethesda, MD 20892

Mobile: (b)(6)

From: Sheron, Brian
Sent: 25 Aug 2015 16:15:01 -0400
To: Weber, Michael
Cc: West, Steven;Case, Michael;Coffin, Stephanie;Tadesse, Rebecca;Brock, Terry
Subject: RE: Response - Cancer Study

We are already drafting it. I wanted to call Kevin and tell him personally about the cancellation rather than have him first learn about it in a letter. We will plan on releasing the letter on the 8th as well.

From: Weber, Michael
Sent: Tuesday, August 25, 2015 4:09 PM
To: Sheron, Brian ; Chen, Yen-Ju
Cc: West, Steven ; Dacus, Eugene ; Colgary, James
Subject: Response - Cancer Study

Suggest you draft your letter now to NAS, so it is released when the paper goes public. When the paper is released, we could share your letter with OCA to share with the Hill.

From: Sheron, Brian
Sent: Tuesday, August 25, 2015 02:53 PM
To: Weber, Michael; Chen, Yen-Ju
Subject: Cancer Study

I spoke with Scott Burnell. Scott had just spoken with Gene. OCA's recommendation is that because the Cancer paper will be released on Tuesday, September 8th, that I should wait and call Kevin Crowley on the morning of September 8th. We also have a roll-out plan with Q&As. Scott said the Commission might get some questions from the minority staff at the hearing, (which is 2 days later I believe), but will make sure they are prepared.

From: Brock, Terry
Sent: 27 Oct 2015 18:40:22 +0000
To: West, Steven
Cc: Tadesse, Rebecca; Coffin, Stephanie; Case, Michael
Subject: RE: RESPONSE - Invitation to NRSB meeting

Steve,

I spoke to Scott Burnell and told him we did not need additional recent studies to justify our decision to cancel the NAS cancer risk study. I told him if any of the NAS cmt members ask about other studies I can speak to that. I told him we have enough public justification to proceed with our presentation through our SECY, press release, and formal letter to NAS cancelling the study.

Toward that end, Stephanie gave me some input on what you were looking for, so I'm putting all the info together for you to review. I know you are in India this week, are you going to be in Europe next week? If so, would you be up for a call to discuss? .

I could always fax you the materials to go over if you only have your blackberry.

Thx,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop TWFN-10
phone: 301-415-1793

From: Brock, Terry
Sent: Tuesday, October 27, 2015 7:14 AM
To: West, Steven <Steven.West@nrc.gov>
Cc: Tadesse, Rebecca <Rebecca.Tadesse@nrc.gov>; Coffin, Stephanie <Stephanie.Coffin@nrc.gov>; Case, Michael <Michael.Case@nrc.gov>
Subject: Re: RESPONSE - Invitation to NRSB meeting

I'll talk with Scott today and get back to you once I understand what he is proposing. However, I agree with you I don't think any other studies should be discussed at NAS as a post-hoc justification on why we cancelled the cancer study.

Terry

From: West, Steven
Sent: Monday, October 26, 2015 7:53 PM
To: Brock, Terry
Cc: Tadesse, Rebecca; Coffin, Stephanie; Case, Michael
Subject: Re: RESPONSE - Invitation to NRSB meeting

Terry,

I think I'm only in the office for one day before the meeting so I won't have much time or opportunity to meet with Scott. Since you're going to be preparing me perhaps you can talk to him in my absence.

I can't open his attachment on my BlackBerry (I'm back in India) so I don't know what its all about. However, if it is about some newly announced study, I don't see the connection with our decision to cancel our study which is what I've been asked to discuss. I'll like your views on this.

Steve

Steven West, Deputy Director
Office of Nuclear Regulatory Research
U.S. NRC

From: Burnell, Scott
Sent: Monday, October 26, 2015 07:02 PM
To: West, Steven; Brock, Terry
Subject: RE: RESPONSE - Invitation to NRSB meeting

Gentlemen;

I'd like to sit down with you both and go over what we plan to say. I'd think we could work in some language regarding the recently announced rad worker study discussed in the attached e-mail thread. Thanks.

Scott

From: West, Steven
Sent: Thursday, October 22, 2015 4:38 PM
To: Burnell, Scott <Scott.Burnell@nrc.gov>; Brock, Terry <Terry.Brock@nrc.gov>
Cc: Weber, Michael <Michael.Weber@nrc.gov>
Subject: RE: RESPONSE - Invitation to NRSB meeting

Scott,

I have informed Kevin Crowley that Terry and I will be attending the meeting. Are you interested in going?

Steve

Steven West, Deputy Director
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission

301-415-1914

Steven.West@nrc.gov

From: Burnell, Scott
Sent: Friday, October 16, 2015 11:00 AM
To: Weber, Michael <Michael.Weber@nrc.gov>; West, Steven <Steven.West@nrc.gov>; Brock, Terry <Terry.Brock@nrc.gov>
Cc: Brenner, Eliot <Eliot.Brenner@nrc.gov>; Screnci, Diane <Diane.Screnci@nrc.gov>
Subject: FW: RESPONSE - Invitation to NRSB meeting

Good Morning, everyone;

I'm available to support the meeting if needed. Thanks.

Scott

From: "Sheron, Brian" <Brian.Sheron@nrc.gov>
Subject: RE: RESPONSE - Invitation to NRSB meeting
Date: 16 October 2015 07:49
To: "Weber, Michael" <Michael.Weber@nrc.gov>
Cc: "West, Steven" <Steven.West@nrc.gov>, "Case, Michael" <Michael.Case@nrc.gov>, "Coffin, Stephanie" <Stephanie.Coffin@nrc.gov>, "Tracy, Glenn" <Glenn.Tracy@nrc.gov>, "McCree, Victor" <Victor.McCree@nrc.gov>, "Brenner, Eliot" <Eliot.Brenner@nrc.gov>, "Screnci, Diane" <Diane.Screnci@nrc.gov>, "Brown, Frederick" <Frederick.Brown@nrc.gov>, "Dacus, Eugene" <Eugene.Dacus@nrc.gov>

OK. Steve is on CWS today. I'll check his calendar when Shirley gets in.

From: Weber, Michael
Sent: Friday, October 16, 2015 7:42 AM
To: Sheron, Brian <Brian.Sheron@nrc.gov>
Cc: West, Steven <Steven.West@nrc.gov>; Case, Michael <Michael.Case@nrc.gov>; Coffin, Stephanie <Stephanie.Coffin@nrc.gov>; Tracy, Glenn <Glenn.Tracy@nrc.gov>; McCree, Victor <Victor.McCree@nrc.gov>; Brenner, Eliot <Eliot.Brenner@nrc.gov>; Screnci, Diane <Diane.Screnci@nrc.gov>; Brown, Frederick <Frederick.Brown@nrc.gov>; Dacus, Eugene <Eugene.Dacus@nrc.gov>
Subject: RESPONSE - Invitation to NRSB meeting

Thanks, Brian. We should support. I will be on foreign travel on the 12th, so I suggest Steve participate with Terry's support. If you agree, I suggest that Steve respond to Kevin's invitation.

From: Sheron, Brian
Sent: Friday, October 16, 2015 7:36 AM
To: Crowley, Kevin <KCCrowley@nas.edu>

Cc: Brock, Terry <Terry.Brock@nrc.gov>; Weber, Michael <Michael.Weber@nrc.gov>
Subject: RE: Invitation to NRSB meeting

Kevin, unfortunately (or fortunately), I am retiring on November 1st after 42 years and almost 2 months of Government Service. Mike Weber will be replacing me, so he will be the RES Office Director then, and it is probably best you direct your question to Mike.

From: Crowley, Kevin [<mailto:KCrowley@nas.edu>]
Sent: Thursday, October 15, 2015 6:35 PM
To: Sheron, Brian <Brian.Sheron@nrc.gov>
Cc: Brock, Terry <Terry.Brock@nrc.gov>; Crowley, Kevin <KCrowley@nas.edu>
Subject: [External_Sender] Invitation to NRSB meeting

Brian:

The Academies Nuclear and Radiation Studies Board is holding an open session at its winter meeting on the afternoon of November 12. The board has asked me to invite an NRC representative to talk with the board about its decision to cancel the cancer risk study. The board is responsible for advising the Academies on the conduct of studies and judges that it has an important responsibility to understand the reasons for this cancellation. The board is interested in having an objective and professional discussion on the reasons for the NRC's decision. This discussion, like all board discussions with outside parties, will be open to the public.

Please let me know if you or your designate will be able to participate in our meeting. Many thanks.

Regards,

Kevin

Kevin D. Crowley, Ph.D.
Director
Nuclear and Radiation Studies Board
The National Academies of Sciences, Engineering, and Medicine
500 Fifth Street, NW
Washington, DC 20001 USA
+1-202-334-3066
kcrowley@nas.edu

Kevin D. Crowley, Ph.D.
Director
Nuclear and Radiation Studies Board
The National Academies of Sciences, Engineering, and Medicine
500 Fifth Street, NW
Washington, DC 20001 USA
+1-202-334-3066

kcrowley@nas.edu

From: Brock, Terry
Sent: 22 Oct 2015 00:26:44 +0000
To: West, Steven
Cc: Case, Michael; Coffin, Stephanie; Tadesse, Rebecca; Flory, Shirley
Subject: Re: RESPONSE - Invitation to NRSB meeting

Hi Steve

Greetings from Seoul. Ill be back in the office on Monday and will put some slides and talking notes together. I guess we'll have to do this electronically.

Safe travels and remember to never hesitate when crossing the Mumbai streets!

From: West, Steven
Sent: Thursday, October 22, 2015 06:39 AM
To: Brock, Terry
Cc: Case, Michael; Coffin, Stephanie; Tadesse, Rebecca; Flory, Shirley
Subject: FW: RESPONSE - Invitation to NRSB meeting

Terry,

See below. Is this meeting on your calendar? I'll be going. It will be great if we can coordinate tomorrow (Thursday) because I'm going back to India this weekend, followed by Paris, and will not be back in the office until November 10th. Let me know.

Steve

Steven West, Deputy Director
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission

301-415-1914
Steven.West@nrc.gov

From: Sheron, Brian
Sent: Friday, October 16, 2015 8:00 AM
To: Flory, Shirley <Shirley.Flory@nrc.gov>
Cc: West, Steven <Steven.West@nrc.gov>
Subject: FW: RESPONSE - Invitation to NRSB meeting

See below. Please let me know if Steve will be here that day, and if so, is he available to go downtown and explain our decision to cancel the cancer study?

From: Weber, Michael
Sent: Friday, October 16, 2015 7:42 AM
To: Sheron, Brian <Brian.Sheron@nrc.gov>

Cc: West, Steven <Steven.West@nrc.gov>; Case, Michael <Michael.Case@nrc.gov>; Coffin, Stephanie <Stephanie.Coffin@nrc.gov>; Tracy, Glenn <Glenn.Tracy@nrc.gov>; McCree, Victor <Victor.McCree@nrc.gov>; Brenner, Eliot <Eliot.Brenner@nrc.gov>; Screnci, Diane <Diane.Screnci@nrc.gov>; Brown, Frederick <Frederick.Brown@nrc.gov>; Dacus, Eugene <Eugene.Dacus@nrc.gov>

Subject: RESPONSE - Invitation to NRSB meeting

Thanks, Brian. We should support. I will be on foreign travel on the 12th, so I suggest Steve participate with Terry's support. If you agree, I suggest that Steve respond to Kevin's invitation.

From: Sheron, Brian

Sent: Friday, October 16, 2015 7:36 AM

To: Crowley, Kevin <KCrowley@nas.edu>

Cc: Brock, Terry <Terry.Brock@nrc.gov>; Weber, Michael <Michael.Weber@nrc.gov>

Subject: RE: Invitation to NRSB meeting

Kevin, unfortunately (or fortunately), I am retiring on November 1st after 42 years and almost 2 months of Government Service. Mike Weber will be replacing me, so he will be the RES Office Director then, and it is probably best you direct your question to Mike.

From: Crowley, Kevin [<mailto:KCrowley@nas.edu>]

Sent: Thursday, October 15, 2015 6:35 PM

To: Sheron, Brian <Brian.Sheron@nrc.gov>

Cc: Brock, Terry <Terry.Brock@nrc.gov>; Crowley, Kevin <KCrowley@nas.edu>

Subject: [External_Sender] Invitation to NRSB meeting

Brian:

The Academies Nuclear and Radiation Studies Board is holding an open session at its winter meeting on the afternoon of November 12. The board has asked me to invite an NRC representative to talk with the board about its decision to cancel the cancer risk study. The board is responsible for advising the Academies on the conduct of studies and judges that it has an important responsibility to understand the reasons for this cancellation. The board is interested in having an objective and professional discussion on the reasons for the NRC's decision. This discussion, like all board discussions with outside parties, will be open to the public.

Please let me know if you or your designate will be able to participate in our meeting. Many thanks.

Regards,

Kevin

Kevin D. Crowley, Ph.D.

Director

Nuclear and Radiation Studies Board

The National Academies of Sciences, Engineering, and Medicine

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Washington, DC 20001 USA

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kcrowley@nas.edu

Kevin D. Crowley, Ph.D.
Director
Nuclear and Radiation Studies Board
The National Academies of Sciences, Engineering, and Medicine
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Washington, DC 20001 USA
+1-202-334-3066
kcrowley@nas.edu

From: Brock, Terry
Sent: 27 Oct 2015 18:42:29 +0000
To: Coffin, Stephanie; West, Steven
Cc: Tadesse, Rebecca; Case, Michael
Subject: RE: RESPONSE - Invitation to NRSB meeting
Attachments: RE: RESPONSE - Invitation to NRSB meeting

Here's the e-mail Scott was talking about. I waived him off from this approach. It's unnecessary for what we need to do down at NAS.

Terry

From: Coffin, Stephanie
Sent: Tuesday, October 27, 2015 7:32 AM
To: Brock, Terry <Terry.Brock@nrc.gov>; West, Steven <Steven.West@nrc.gov>
Cc: Tadesse, Rebecca <Rebecca.Tadesse@nrc.gov>; Case, Michael <Michael.Case@nrc.gov>
Subject: RE: RESPONSE - Invitation to NRSB meeting

Can someone forward me the attachment Steve received from Scott?

From: Brock, Terry
Sent: Tuesday, October 27, 2015 7:14 AM
To: West, Steven <Steven.West@nrc.gov>
Cc: Tadesse, Rebecca <Rebecca.Tadesse@nrc.gov>; Coffin, Stephanie <Stephanie.Coffin@nrc.gov>; Case, Michael <Michael.Case@nrc.gov>
Subject: Re: RESPONSE - Invitation to NRSB meeting

I'll talk with Scott today and get back to you once I understand what he is proposing. However, I agree with you I don't think any other studies should be discussed at NAS as a post-hoc justification on why we cancelled the cancer study.

Terry

From: West, Steven
Sent: Monday, October 26, 2015 7:53 PM
To: Brock, Terry
Cc: Tadesse, Rebecca; Coffin, Stephanie; Case, Michael
Subject: Re: RESPONSE - Invitation to NRSB meeting

Terry,

I think I'm only in the office for one day before the meeting so I won't have much time or opportunity to meet with Scott. Since you're going to be preparing me perhaps you can talk to him in my absence.

I can't open his attachment on my BlackBerry (I'm back in India) so I don't know what its all about. However, if it is about some newly announced study, I don't see the connection with our decision to cancel our study which is what I've been asked to discuss. I'll like your views on this.

Steve

Steven West, Deputy Director
Office of Nuclear Regulatory Research
U.S. NRC

From: Burnell, Scott
Sent: Monday, October 26, 2015 07:02 PM
To: West, Steven; Brock, Terry
Subject: RE: RESPONSE - Invitation to NRSB meeting

Gentlemen;

I'd like to sit down with you both and go over what we plan to say. I'd think we could work in some language regarding the recently announced rad worker study discussed in the attached e-mail thread. Thanks.

Scott

From: West, Steven
Sent: Thursday, October 22, 2015 4:38 PM
To: Burnell, Scott <Scott.Burnell@nrc.gov>; Brock, Terry <Terry.Brock@nrc.gov>
Cc: Weber, Michael <Michael.Weber@nrc.gov>
Subject: RE: RESPONSE - Invitation to NRSB meeting

Scott,

I have informed Kevin Crowley that Terry and I will be attending the meeting. Are you interested in going?

Steve

Steven West, Deputy Director
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission

301-415-1914
Steven.West@nrc.gov

From: Burnell, Scott
Sent: Friday, October 16, 2015 11:00 AM
To: Weber, Michael <Michael.Weber@nrc.gov>; West, Steven <Steven.West@nrc.gov>; Brock, Terry

<Terry.Brock@nrc.gov>

Cc: Brenner, Eliot <Eliot.Brenner@nrc.gov>; Screnci, Diane <Diane.Screnci@nrc.gov>

Subject: FW: RESPONSE - Invitation to NRSB meeting

Good Morning, everyone;

I'm available to support the meeting if needed. Thanks.

Scott

From: "Sheron, Brian" <Brian.Sheron@nrc.gov>
Subject: RE: RESPONSE - Invitation to NRSB meeting
Date: 16 October 2015 07:49

To: "Weber, Michael" <Michael.Weber@nrc.gov>

Cc: "West, Steven" <Steven.West@nrc.gov>, "Case, Michael" <Michael.Case@nrc.gov>, "Coffin, Stephanie" <Stephanie.Coffin@nrc.gov>, "Tracy, Glenn" <Glenn.Tracy@nrc.gov>, "McCree, Victor" <Victor.McCree@nrc.gov>, "Brenner, Eliot" <Eliot.Brenner@nrc.gov>, "Screnci, Diane" <Diane.Screnci@nrc.gov>, "Brown, Frederick" <Frederick.Brown@nrc.gov>, "Dacus, Eugene" <Eugene.Dacus@nrc.gov>

OK. Steve is (b)(6) today. I'll check his calendar when Shirley gets in.

From: Weber, Michael

Sent: Friday, October 16, 2015 7:42 AM

To: Sheron, Brian <Brian.Sheron@nrc.gov>

Cc: West, Steven <Steven.West@nrc.gov>; Case, Michael <Michael.Case@nrc.gov>; Coffin, Stephanie <Stephanie.Coffin@nrc.gov>; Tracy, Glenn <Glenn.Tracy@nrc.gov>; McCree, Victor <Victor.McCree@nrc.gov>; Brenner, Eliot <Eliot.Brenner@nrc.gov>; Screnci, Diane <Diane.Screnci@nrc.gov>; Brown, Frederick <Frederick.Brown@nrc.gov>; Dacus, Eugene <Eugene.Dacus@nrc.gov>

Subject: RESPONSE - Invitation to NRSB meeting

Thanks, Brian. We should support. I will be on foreign travel on the 12th, so I suggest Steve participate with Terry's support. If you agree, I suggest that Steve respond to Kevin's invitation.

From: Sheron, Brian

Sent: Friday, October 16, 2015 7:36 AM

To: Crowley, Kevin <KCrowley@nas.edu>

Cc: Brock, Terry <Terry.Brock@nrc.gov>; Weber, Michael <Michael.Weber@nrc.gov>

Subject: RE: Invitation to NRSB meeting

Kevin, unfortunately (or fortunately), I am retiring on November 1st after 42 years and almost 2 months of Government Service. Mike Weber will be replacing me, so he will be the RES Office Director then, and it is probably best you direct your question to Mike.

From: Crowley, Kevin [<mailto:KCrowley@nas.edu>]

Sent: Thursday, October 15, 2015 6:35 PM

To: Sheron, Brian <Brian.Sheron@nrc.gov>

Cc: Brock, Terry <Terry.Brock@nrc.gov>; Crowley, Kevin <KCrowley@nas.edu>

Subject: [External_Sender] Invitation to NRSB meeting

Brian:

The Academies Nuclear and Radiation Studies Board is holding an open session at its winter meeting on the afternoon of November 12. The board has asked me to invite an NRC representative to talk with the board about its decision to cancel the cancer risk study. The board is responsible for advising the Academies on the conduct of studies and judges that it has an important responsibility to understand the reasons for this cancellation. The board is interested in having an objective and professional discussion on the reasons for the NRC's decision. This discussion, like all board discussions with outside parties, will be open to the public.

Please let me know if you or your designate will be able to participate in our meeting. Many thanks.

Regards,

Kevin

Kevin D. Crowley, Ph.D.
Director
Nuclear and Radiation Studies Board
The National Academies of Sciences, Engineering, and Medicine
500 Fifth Street, NW
Washington, DC 20001 USA
+1-202-334-3066
kcrowley@nas.edu

Kevin D. Crowley, Ph.D.
Director
Nuclear and Radiation Studies Board
The National Academies of Sciences, Engineering, and Medicine
500 Fifth Street, NW
Washington, DC 20001 USA
+1-202-334-3066
kcrowley@nas.edu

From: Tadesse, Rebecca
Sent: 20 Oct 2015 07:52:28 -0400
To: Burnell, Scott
Cc: Harrington, Holly; Milligan, Patricia
Subject: RE: blog comment

Hi Scott,

It looks good to me.

*Rebecca Tadesse, Chief
Radiation Protection Branch
Division of Systems Analysis
Office of Nuclear Regulatory Research
301-415-1824*

From: Burnell, Scott
Sent: Monday, October 19, 2015 4:45 PM
To: Tadesse, Rebecca
Cc: Harrington, Holly; Milligan, Patricia
Subject: Fw: blog comment

Hi Rebecca;

Trish and I came up with this response to the latest comment on the cancer study blog post. Since Terry's not available, how does it look to you? Thanks.

Scott

Sent from an NRC Blackberry
Scott Burnell

(b)(6)

From: Burnell, Scott
Sent: Monday, October 19, 2015 03:55 PM
To: Milligan, Patricia; Harrington, Holly
Subject: RE: blog comment

Here's our suggested reply:

The study made many assumptions about a closely monitored population of radiation workers. From this the researchers concluded that there was an association (not a direct cause and effect) between those workers' doses and the occurrence of leukemia. It would be difficult to try and apply such study results to the general public. The study included more than 300,000 people from several countries. This is an example of the difficulty in assembling a large enough population to study very small health effects.

From: Milligan, Patricia
Sent: Monday, October 19, 2015 3:50 PM
To: Burnell, Scott <Scott.Burnell@nrc.gov>
Subject: RE: blog comment

And actually for low doses 300,000 isn't much of a study population. But yes I think that is a good addition.

From: Burnell, Scott
Sent: Monday, October 19, 2015 3:49 PM
To: Milligan, Patricia <Patricia.Milligan@nrc.gov>
Subject: RE: blog comment

That works for me. Actually, how about another sentence or two:

"The study included more than 300,000 people from several countries. This is an example of the difficulty in assembling a large enough population to study very small health effects."

From: Milligan, Patricia
Sent: Monday, October 19, 2015 3:16 PM
To: Burnell, Scott <Scott.Burnell@nrc.gov>
Subject: RE: blog comment

I like that but what if we modified to say

"The study made many assumptions about a closely monitored population of radiation workers. From this the researchers concluded that there was an association (not a direct cause and effect) between those workers' doses and the occurrence of leukemia. It would be difficult to try and apply such study results to the general public."

From: Burnell, Scott
Sent: Monday, October 19, 2015 2:38 PM
To: Milligan, Patricia <Patricia.Milligan@nrc.gov>
Subject: RE: blog comment

Tossing both our efforts into the blender:

"The study made many assumptions about a closely monitored population of radiation workers and then suggested associations (not a direct cause and effect) between those workers' doses and the occurrence of leukemia. It would be difficult to try and apply such study results to the general public."

From: Milligan, Patricia
Sent: Monday, October 19, 2015 2:35 PM

To: Burnell, Scott <Scott.Burnell@nrc.gov>

Subject: RE: blog comment

Post hoc ergo propter hoc (after this, therefore because of this) or cum hoc ergo propter hoc (with this, therefore because of this)? Logical fallacies that may be afoot in this paper as well. The authors suggest only correlation or "association". I think we need to keep the answer in that same tentativeness. Answering that rad workers have doses much higher etc lends the air of causation to the study. I think we want to stay away from that. The data mining was poor and the assumptions were sweeping. But after our NAS experience I understand how epidemiologists think and this is a good example of it.

" the study found an association between radiation doses amongst occupational workers and leukemia. Correlation or association does not mean causation. Many assumptions had to be made about the workers in this study. It would be difficult to try and apply such study results to the general public. "

From: Burnell, Scott

Sent: Monday, October 19, 2015 2:22 PM

To: Milligan, Patricia <Patricia.Milligan@nrc.gov>

Subject: RE: blog comment

Would we be on safe ground saying something along the lines of:

"The study examined a closely monitored population of radiation workers who received well-documented doses [tens, hundreds] of times larger than members of the general public receive from natural sources. It would be difficult to try and apply the study results to the general public."

From: Milligan, Patricia

Sent: Monday, October 19, 2015 2:16 PM

To: Burnell, Scott <Scott.Burnell@nrc.gov>

Subject: RE: blog comment

I am not sure how they (the lancet folks) got the doses in mGy (mrad). The researchers also made some rather broad sweeping generalizations regarding socio-economic status and job title and other confounding items such as smoking.especially in the countries under review.

"publish or perish"

From: Burnell, Scott

Sent: Monday, October 19, 2015 1:53 PM

To: Milligan, Patricia <Patricia.Milligan@nrc.gov>

Subject: RE: blog comment

If I can get the mrem conversion for those Gy figures, as well as an understanding of the absolute risk associated with it, that would be great!

From: Milligan, Patricia
Sent: Monday, October 19, 2015 1:40 PM
To: Burnell, Scott <Scott.Burnell@nrc.gov>
Subject: RE: blog comment

Ian makes some very strong statements based on what the researchers (who published in Lancet) refer to as association - not cause and effect. "In summary, this study provides strong evidence of **an association** between protracted low dose radiation exposure and leukaemia mortality" Let me wander through it a bit and see what I can come up with.

From: Burnell, Scott
Sent: Monday, October 19, 2015 9:47 AM
To: Brock, Terry <Terry.Brock@nrc.gov>; Milligan, Patricia <Patricia.Milligan@nrc.gov>
Subject: RE: blog comment

Digging a little further:

<http://www.thelancet.com/journals/lanhae/article/PIIS2352-3026%2815%2900094-0/fulltext>

And of course, it's radiation worker dose and not public dose.

From: Burnell, Scott
Sent: Monday, October 19, 2015 9:45 AM
To: Brock, Terry <Terry.Brock@nrc.gov>; Milligan, Patricia <Patricia.Milligan@nrc.gov>
Subject: FW: blog comment
Importance: High

Terry (if you get this anytime soon), Trish;

Apparently Ian Fairlie is at it again.

<http://www.counterpunch.org/2015/10/16/radiation-and-cancer-risks-of-leukemia-in-nuclear-workers-more-than-double-previous-estimate/>

Anything to see here? Thanks.

Scott

From: Harrington, Holly
Sent: Monday, October 19, 2015 9:41 AM
To: Burnell, Scott <Scott.Burnell@nrc.gov>
Subject: blog comment

There's a new comment on the cancer study asking us to evaluate a study with a link. Can you look at it and let's discuss

Holly

From: Ramsey, Kevin
Sent: 29 Jun 2015 14:17:18 -0400
To: Brock, Terry
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Dave McIntyre is acting as Cathy's TA. I just spoke with him and he promised to track it down.

From: Brock, Terry
Sent: Monday, June 29, 2015 2:12 PM
To: Ramsey, Kevin
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Hi Kevin,
Did Cathy get a chance to concur?
Terry

From: Ramsey, Kevin
Sent: Thursday, June 25, 2015 1:42 PM
To: Brock, Terry
Subject: FW: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

FYI.

From: Roman, Cinthya
Sent: Thursday, June 25, 2015 1:41 PM
To: Ramsey, Kevin
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Robert Sun is going to ask Cathy in a few minutes.

From: Ramsey, Kevin
Sent: Thursday, June 25, 2015 1:40 PM
To: Roman, Cinthya
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Did Cathy Haney re-concur on the revised paper? RES is asking about it.

From: Roman, Cinthya
Sent: Tuesday, June 23, 2015 12:42 PM
To: Brock, Terry
Cc: Ramsey, Kevin
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

The ML number of the document didn't change, that's why we were confused.

From: Brock, Terry
Sent: Tuesday, June 23, 2015 12:41 PM
To: Roman, Cinthya
Cc: Ramsey, Kevin
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Hi Cinthya,

The direction of the project changed mid-concurrence, so we need a new concurrence. Basically, the conclusion changed telling the Commission we do not plan on moving forward with the study. Kevin Ramsey is my NMSS POC.

Thanks,

Terry
Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop TWFN-10
phone: 301-415-1793

From: Roman, Cinthya
Sent: Tuesday, June 23, 2015 11:15 AM
To: Brock, Terry
Subject: FW: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Hi Terry,

I have a question for you. I received the request below on June 19, but the package originally came on June 3. Cathy Haney already concurred on that package (hardcopy). Mike Case picked up a hardcopy package from NSIR on Friday with Cathy's original concurrence on it and NRR's original concurrence from when the package came originally on 6/3/15.

Please let me know if you are requesting NMSS concurrence, or the original concurrence will suffice.

Thanks,
Cinthya

From: Gaskins, Kimberly
Sent: Friday, June 19, 2015 2:02 PM
To: RidsOpaMail Resource; RidsRgn1MailCenter Resource; RidsNmssOd Resource; RidsNroMailCenter Resource; RidsNrrMailCenter Resource; RidsNsirMailCenter Resource; RidsOgcMailCenter Resource
Cc: Brock, Terry; Coffin, Stephanie; Case, Michael; Tadesse, Rebecca; Ford, Jennifer; Ramsey, Kevin; Milligan, Patricia; Hinson, Charles; Garry, Steven; Mizuno, Beth; Burnell, Scott; Nimitz, Ronald
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

All,

Please concur no later than COB June 25th. Please contact Terry Brock at Terry.brock@nrc.gov with any questions or comments concerning this document.

Thank you

Kim

From: Gaskins, Kimberly
Sent: Friday, June 19, 2015 1:57 PM
To: RidsOpaMail Resource; RidsRgn1MailCenter Resource; RidsNmssOd Resource; RidsNroMailCenter Resource; RidsNrrMailCenter Resource; RidsNsirMailCenter Resource; RidsOgcMailCenter Resource
Cc: Brock, Terry; Coffin, Stephanie; Case, Michael; Tadesse, Rebecca; Ford, Jennifer; Ramsey, Kevin; Milligan, Patricia; Hinson, Charles; Garry, Steven; Mizuno, Beth; Burnell, Scott; Nimitz, Ronald
Subject: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

MEMORANDUM TO: Those on the Attached List

FROM: M. Case

SUBJECT: SECY-RESULTS OF THE ANALYSIS OF CANCER RISKS
IN POPULATION NEAR NUCLEAR FACILITIES:
PHASE 2 PILOT PLANNING PROJECT AND NEXT STEPS

[View ADAMS P8 Properties ML15141A343](#)

[Open ADAMS P8 Package \(SECY - Results of the Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 2 Pilot Planning Project and Next Steps\)](#)

From: Sheron, Brian
Sent: 10 Jun 2015 11:50:35 -0400
To: Coffin, Stephanie; West, Steven
Cc: Case, Michael; Tadesse, Rebecca; Brock, Terry
Subject: Re: Revised email for Mike on the cancer study

Looks fine. I'm at WF and can't copy and send from my BB. I suggest Rebecca send it to Mike.

From: Coffin, Stephanie
Sent: Wednesday, June 10, 2015 10:56 AM
To: Sheron, Brian; West, Steven
Cc: Case, Michael; Tadesse, Rebecca; Brock, Terry
Subject: FW: Revised email for Mike on the cancer study

Brian and Steve,
Mike and I think Rebecca captured our morning conversation well – see email below.
Is there a chance you can send before our CA brief this afternoon?
We are standing by to support.
Stephanie

From: Tadesse, Rebecca
Sent: Wednesday, June 10, 2015 10:37 AM
To: Coffin, Stephanie; Case, Michael; Brock, Terry
Subject: Revised email for Mike on the cancer study

Stephanie,
Please let me know if you are ok with the changes I have made and if I have captured Brian's thoughts.

Mike,
Thanks for your feedback at last Friday's pre-brief of the Commissioners' Assistants briefing for the "next steps" in the analysis of cancer risks.

Based on the feedback we have received thus far from the offices that initiated the User Need requested for the study (e.g., NRR, Region I, OPA, NSIR, etc.) remain very supportive of this work. Therefore if we get shortfall money in FY16 and our requested budget in FY17, we recommend we move forward with the NCRP approach. However if in FY 16 we do not receive a shortfall money or FY17 requested budget is not approved, we will inform the EDO and the Commission that we will not move forward with the project.

If we do get some funding, we believe we can support this study at a cost of about \$500K/year. The Radiation Protection program in RES has a large enough portfolio to support a project of this size over the course of several years, even within the current (declining) fiscal environment. Currently there is about \$300K in the FY17 budget for this work. When we reevaluate the work completed and the new work identified for the Radiation Protection program in the context of the FY 18 budget, RES may be able to provide the \$200K difference. This would allow the project to start in FY17. Getting the project "off the ground" is the hard part – once it is going, I think we'll have the support to continue.

This would mean the project would take a little longer than we are current projecting (an additional 1-2 years). We still think it is worthwhile pursuing to see if we can't get this going in FY17. If we can't, then we'll throw in the towel.

Let me know if you support,
Brian

From: Case, Michael
Sent: 4 Jun 2015 07:51:56 -0400
To: Coffin, Stephanie; Brock, Terry
Cc: Tadesse, Rebecca
Subject: RE: SECY - Cancer Risks in Populations Near Nuc Facilities

I'm liking it. Maybe add a sentence that current funding projections (?) would not support starting this project before FY 17.

-----Original Message-----

From: Coffin, Stephanie
Sent: Thursday, June 04, 2015 7:47 AM
To: Brock, Terry; Case, Michael
Cc: Tadesse, Rebecca
Subject: RE: SECY - Cancer Risks in Populations Near Nuc Facilitie

How about this:

"The planned NCRP approach to the study will take 2-3 years to complete and will cost approximately \$2.5 million dollars. Full funding for this study has not been established at this time. The staff plans to obtain funding through the operating reactors business line through the Planning, Budget, and Performance Management process."

-----Original Message-----

From: Brock, Terry
Sent: Wednesday, June 03, 2015 3:13 PM
To: Coffin, Stephanie; Case, Michael
Cc: Tadesse, Rebecca
Subject: FW: SECY - Cancer Risks in Populations Near Nuc Facilitie

AHi

From OCFO. Not sure how to answer this one. Any words to share?

Thx
Terry

From: Champion, Tanya
Sent: Wednesday, June 03, 2015 3:11 PM
To: Brock, Terry
Subject: SECY - Cancer Risks in Populations Near Nuc Facilitie

Hi Terry

I am reviewing the resources section for OCFO. I have a few questions, to suggest re-wording in this section

RES has \$110K budgeted for this year. Is this in OR/Research/Reactor Research? Do you plan to plan to redirect additional resources this year or will only use what is currently budgeted? What will be the source of funding?

How do you expect you will get resources in FY 2016? Since you plan to request a nominal amount in FY 2017, what amount do you plan to obligate next FY?

Your planned obligations for each FY would help.

Thanks
Tanya
301 415 7544

From: Sheron, Brian
Sent: 25 Jun 2015 16:56:38 -0400
To: Brock, Terry; West, Steven
Cc: Hoxie, Chris; Tadesse, Rebecca; Case, Michael; Coffin, Stephanie
Subject: RE: Status of Cancer SECY, Rev. 2

OK, thanks.

From: Brock, Terry
Sent: Thursday, June 25, 2015 1:42 PM
To: Sheron, Brian; West, Steven
Cc: Hoxie, Chris; Tadesse, Rebecca; Case, Michael; Coffin, Stephanie
Subject: Status of Cancer SECY, Rev. 2

Brian,

Chris asked me to touch base on the status of the cancer study SECY paper. It is currently out for concurrence and we should have all the user-need offices signed off by tomorrow. Youâ€™ll see it soon after that. Itâ€™s due to SECY by the end of July.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop TWFN-10
phone: 301-415-1793

From: Brock, Terry
Sent: 12 Nov 2015 13:22:45 +0000
To: 'Crowley, Kevin'
Subject: RE: Steve West

Hi Kevin,

Steve is a Mr. (b)(6)

See you later today,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop TWFN-10
phone: 301-415-1793

From: Crowley, Kevin [mailto:KCrowley@nas.edu]
Sent: Tuesday, November 10, 2015 6:08 PM
To: Brock, Terry <Terry.Brock@nrc.gov>
Subject: [External_Sender] Steve West

Hi Terry:

I am putting together an introduction for Steve West's briefing to my board later this week. Can you tell me whether Steve is a "Dr." or "Mr."? Thanks.

(b)(6)

Regards,

Kevin

From: Milligan, Patricia
Sent: 9 Apr 2015 10:13:34 -0400
To: Brock, Terry
Subject: RE: Suggested Briefing Points for Cmr Meeting

thanks.

From: Brock, Terry
Sent: Thursday, April 09, 2015 9:31 AM
To: McNamara, Nancy
Cc: Milligan, Patricia
Subject: RE: Suggested Briefing Points for Cmr Meeting

Hi Nancy,

Attached is the OPA Backgrounder on the study you can provide to the CT Commissioner. NAS did select Millstone as one of the pilot study sites, but we have not given the go ahead to start the analysis until we work out our path forward. As such, there is no data or analysis to share about Millstone.

For further background, here's the link to the internal study communication plan >>
<https://adamsxt.nrc.gov/WorkplaceXT/IBMgetContent?objectStoreName=Main...Library&id=current&vsId=%7bE7252F84-3348-4D93-87F2-3377795146B7%7d&objectType=document>

Terry
-----Original Message-----
From: McNamara, Nancy
Sent: Wednesday, April 08, 2015 8:15 PM
To: Brock, Terry; Milligan, Patricia
Subject: RE: Suggested Briefing Points for Cmr Meeting

It's been a while for me. Can you give me some background material that summarizes the project and where the path has currently ended as we decide path forward? He is the Commissioner for the Department of Energy and Environmental Protection Agency, so I don't think he has any interest in budget. What does the data say regarding the area surrounding Millstone since they were part of the study. I'm looking for high level overview and summary. He is new to the agency in the past year.

-----Original Message-----
From: Brock, Terry
Sent: Wednesday, April 08, 2015 3:34 PM
To: Milligan, Patricia; McNamara, Nancy
Cc: Burnell, Scott; Tadesse, Rebecca
Subject: RE: Suggested Briefing Points for Cmr Meeting

Nancy
We are in the middle of working out a path forward on the cancer study. We met with the EDO last week and are working on some options. However, nothing has been decided yet. I would refrain talking about pre-decisional budget issues at this time.

Our message for now is that staff is evaluating NAS' proposal on completing the pilot study and we will communicate to the Commission on our path forward this Summer.

Terry

From: Milligan, Patricia

Sent: Wednesday, April 08, 2015 3:21 PM
To: McNamara, Nancy; Brock, Terry
Subject: RE: Suggested Briefing Points for Cmr Meeting

Nancy,
Terry can help you with the best answer to the question about the cancer study.
Trish

From: McNamara, Nancy
Sent: Wednesday, April 08, 2015 12:41 PM
To: Milligan, Patricia
Subject: FW: Suggested Briefing Points for Cmr Meeting

Trish, Can you help me with the third bullet highlighted below?

From: Semancik, Jeffrey [<mailto:Jeffrey.Semancik@ct.gov>]
Sent: Wednesday, April 08, 2015 12:00 PM
To: McNamara, Nancy
Cc: Firsick, Michael
Subject: Suggested Briefing Points for Cmr Meeting

Nancy,

Per our call yesterday. I think it would be appropriate for the NRC to address the following with Commissioner Klee:

- Degree of public interaction/any public concerns from annual meeting
- The general direction of questions and answers from the press interview the NRC has with The New London Day newspaper on Wed morning
- Status of the cancer pilot study (CY and Millstone are both in the pilot study)

Jeff Semancik
Director, Radiation Division
Connecticut Department of Energy and Environmental Protection
79 Elm Street, Hartford, CT 06106-5127
P: 860.424.4190 | F: 860.706.5339 | E: Jeffrey.Semancik@ct.gov <<mailto:Jeffrey.Semancik@ct.gov>>

[cid:image001.png@01D0720F.B955ACA0]

www.ct.gov/deep <<http://www.ct.gov/deep>>

Conserving, improving and protecting our natural resources and environment; Ensuring a clean, affordable, reliable, and sustainable energy supply.

From: Milligan, Patricia
Sent: 29 Jun 2015 12:38:08 -0400
To: Brock, Terry
Subject: RE: UPDATE: Cancer Risk Study, Phase II

I will speak with Brian and we should have no problem with concurrence. BTW I only guessed at the meaning of the existing body of information.

From: Brock, Terry
Sent: Monday, June 29, 2015 11:59 AM
To: Milligan, Patricia; Lewis, Doris
Subject: RE: UPDATE: Cancer Risk Study, Phase II

What's next for concurrence?

Terry Brock, Ph.D.

Office of Nuclear Regulatory Research

U.S. Nuclear Regulatory Commission

Washington D.C. 20555

Mail Stop TWFN-10

phone: 301-415-1793

From: Brock, Terry
Sent: Friday, June 26, 2015 10:21 AM
To: Milligan, Patricia; Lewis, Doris
Subject: RE: UPDATE: Cancer Risk Study, Phase II

I speak to that explicitly in the paper already.

From: Milligan, Patricia
Sent: Friday, June 26, 2015 9:49 AM
To: Brock, Terry; Lewis, Doris
Subject: RE: UPDATE: Cancer Risk Study, Phase II

I think perhaps Brian is referring to the various studies that have been undertaken over the years, albeit not in the US, and also Fukushima work.

From: Brock, Terry
Sent: Friday, June 26, 2015 8:31 AM
To: Lewis, Doris
Cc: Milligan, Patricia
Subject: RE: UPDATE: Cancer Risk Study, Phase II

Hi Doris,

Monday is fine for concurrence.

As far as the comment on the conclusion. Overall, per EDO direction, the budget is the only reason why we aren't moving forward with the NCRP option to complete the study. Just two weeks ago we had all the user-need requestors concurrences to move forward with this option, including NSIR. Any other reasons put forward would not be accurate. This may also appear as a post-hoc rationalization that we weren't serious about doing the study in the first place. We already address the prioritization issue by talking about deferring to safety significant activities (licensing and inspections). As far as the usefulness of the 1990 NCI study, we mentioned in the SECY that NCI continues to support the results. However, we've argued for over eight years that we wanted to update the information. Saying otherwise at this point is inconsistent with all the written and spoken external and internal communications since we started in 2007. As far as the "existing body of information", I'm not sure what this means.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop TWFN-10
phone: 301-415-1793

From: Lewis, Doris

Sent: Thursday, June 25, 2015 2:56 PM

To: Brock, Terry

Cc: Milligan, Patricia

Subject: UPDATE: Cancer Risk Study, Phase II

Hi Terry,

In discussing this paper with NSIR OD management, a question was raised regarding some of the language in the "Conclusion" section.

NSIR's Deputy Director is asking whether or not RES can provide some additional language in the "Conclusion" section that addresses the current usefulness of the 1990 study information, as opposed to just focusing on the uncertainty in the budget.

Our Deputy Director is looking for words along the following: "the low priority of this work, due to the existing body of information, would result in the deferral of this work for the foreseeable future."

Please let us know about adding some additional wording to the "Conclusion" section and if we can get an extension until Monday, June 29th to concur.

Thanks,
Doris

From: Milligan, Patricia
Sent: 18 Aug 2015 10:06:13 -0400
To: Brock, Terry
Subject: RE: UPDATE SECY paper for Cancer Study

All is ok how was your Oregon trip?

From: Brock, Terry
Sent: Tuesday, August 11, 2015 1:10 PM
To: Milligan, Patricia
Subject: RE: UPDATE SECY paper for Cancer Study

For now. I can't tell when to get excited anymore. Hope all is well.

From: Milligan, Patricia
Sent: Tuesday, August 11, 2015 1:01 PM
To: Brock, Terry
Subject: Re: UPDATE SECY paper for Cancer Study

I love it. We are concurring

From: Brock, Terry
Sent: Tuesday, August 11, 2015 12:31:30 PM
To: Milligan, Patricia; Garry, Steven; Ramsey, Kevin; Burnell, Scott; Nimitz, Ronald; Hinson, Charles; Mizuno, Beth
Cc: Weil, Jenny
Subject: UPDATE SECY paper for Cancer Study

Hi All,

FYI: No action needed. Your management has been informed already.

As a reminder, you've concurred on two versions of the paper that recommended going forward with the more modest NCRP approach to update the NCI study and the second version to cancel the project completely due to budget constraints. Since then, it has been the subject of much negotiation among Brian, the 17th, and the 18th floors. Brian has even been to every Commission office to tell them about this version of the paper.

Most of the paper is the same (as far as telling the story). What is different is the Conclusion and Resource section. The punch line of the conclusion section is that we (the NRC) are going to proceed with small scale version of the Cancer Study which involves a "simple" update of the 1990 NCI Study. The punch line of the resource section is that it probably won't start until FY 17 for budgetary reasons (and may not proceed at all if the budget is unattainable).

Thanks

Terry

From: Burnell, Scott
Sent: 1 Sep 2015 10:57:30 -0400
To: Chen, Yen-Ju;Tadesse, Rebecca;Brock, Terry
Subject: Re: Who's in charge of Cancer study Comm Plan? (EOM)

Terry and Rebecca are a good place to start.

Sent from an NRC Blackberry
Scott Burnell

(b)(6)

From: Chen, Yen-Ju
Sent: Tuesday, September 01, 2015 10:50 AM
To: Burnell, Scott
Subject: Who's in charge of Cancer study Comm Plan? (EOM)

From: Coffin, Stephanie
Sent: 13 Jul 2015 11:52:37 -0400
To: Pope, Tia;Gaskins, Kimberly
Cc: Brock, Terry;Case, Michael;Tadesse, Rebecca
Subject: RE: Worker Study Project

Mike and I just had a meeting moved that presents a conflict for the meeting below – can one of you please reschedule?

Sorry for the inconvenience,
Stephanie

-----Original Appointment-----

From: RES_DSA_Calendar Resource
Sent: Wednesday, July 08, 2015 10:39 AM
To: RES_DSA_Calendar Resource; Brock, Terry; Case, Michael; Coffin, Stephanie; Tadesse, Rebecca
Subject: Worker Study Project
When: Tuesday, July 14, 2015 3:00 PM-3:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Mike's Office

Meeting requested by: T. Brock

From: Ramsey, Kevin
Sent: 22 Jul 2014 15:59:48 -0400
To: Hickey, James;Johnson, Robert
Cc: Brock, Terry;Hartland, David;Rivera, Carmen;Mendez-Gonzalez, Sandra
Subject: RII request causing delays in cancer study efforts

See e-mail string below. RES has been trying to collect records for the NAS cancer study and OIS had estimated that records for NFS would be available on 7/11. However, the records never arrived because OIS got a request from RII for the same information. We don't want the ECAN response to bring the cancer study efforts to a dead stop. I believe the cancer study should have priority over the ECAN response. Do we need a call to coordinate these efforts?

-----Original Message-----

From: Brock, Terry
Sent: Tuesday, July 22, 2014 3:04 PM
To: Ramsey, Kevin
Subject: FW: 70-143

Did you know anything about the RII request? Is the Chairman responding to the concerns she heard on her site visit, maybe?

-----Original Message-----

From: Pinckney, David
Sent: Tuesday, July 22, 2014 2:46 PM
To: Brock, Terry
Subject: RE: 70-143

Terry,

I will need to check on that because we received a request from Region II in regards to retrieving all records related to NFS from 1957 to 1999 for the Chairman. There is a possibility that these records will be scanned into ADAMS. Is there something in particular that you may need a copy? Do you just want to review the material?

David

-----Original Message-----

From: Brock, Terry
Sent: Tuesday, July 22, 2014 2:14 PM
To: Pinckney, David
Subject: RE: 70-143

Hi David,

Did you have an ETA for the NFS boxes?

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07

phone: 301-251-7487

-----Original Message-----

From: Pinckney, David
Sent: Wednesday, July 09, 2014 8:19 AM
To: Brock, Terry
Subject: RE: 70-143

Terry,

I have been in and out of the office for the past 2 weeks. I do not have any updates on your request. I will have to put a "rush" on the 20 documents that you requested to be added to ADAMS pertaining to the nuclear power plants effluent reports. As for 70-143, I will do a search on that docket number and have the records recalled from offsite storage. They should arrive by Friday (7/11) afternoon.

David

-----Original Message-----

From: Brock, Terry
Sent: Tuesday, July 08, 2014 3:38 PM
To: Pinckney, David
Subject: RE: 70-143

Hi David,

Do we have any updates for tomorrow's call, re: NFS boxes?

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

-----Original Message-----

From: Brock, Terry
Sent: Tuesday, June 17, 2014 8:39 AM
To: Brock, Terry; Pinckney, David
Subject: RE: 70-143

Thanks

From: Brock, Terry
Sent: Tuesday, June 17, 2014 8:30 AM
To: Pinckney, David
Subject: RE: 70-143

Hi David, I would like to pull the Boxes for NFS Docket 70-143 from the start of operations to 2000. NAS needs the fluent records up till then. I'll go through the boxes myself.

From: Pinckney, David
Sent: Wednesday, May 14, 2014 11:15 AM
To: Brock, Terry

Subject: FW: 70-143

Terry, the attached is an example of what we have on 70-143. If this helps, I can provide more. I believe some of the records related to 70-143 are in the regions. I'm not sure if what they have is a copy of what headquarters have or not. Just let me know.

Now for the list that you sent me, what we would do, is look through the files that are stored offsite and retrieve the documents, copy them, and send them to you or we have a process in which we can add them to ADAMS. If you want them added in bulk, we would probably need funding.

David

-----Original Message-----

From: OIS Digital Sender O6-H1 [<mailto:OIS6b.DigitalSender@nrc.gov>]

Sent: Wednesday, May 14, 2014 10:59 AM

To: Pinckney, David

Subject: 70-143

Please open the attached document. This document was digitally sent to you using an HP Digital Sending device.

From: Ramsey, Kevin
Sent: 2 Sep 2014 14:33:40 -0400
To: Brock, Terry
Subject: Room for effluent records update meeting with NAS

See below. I reserved 3WF-9A32.

Please note that FDA is on the 12th floor. (I'm on the 13th floor.) I thought a reserved room was better than fussing with huddle rooms that you can't reserve.

-----Original Appointment-----

From: HQ-3WFN-9A32-16p
Sent: Tuesday, September 02, 2014 2:30 PM
To: Ramsey, Kevin
Subject: Accepted: Effluent records update meeting with NAS
When: Thursday, September 04, 2014 1:00 PM-2:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: HQ-3WFN-9A32-16p

Your request was accepted.

Thank you for requesting the use of this conference room.

Disclaimer: Conference room reservations are subject to change. Conference rooms that respond as Tentative to the reservation request require approval of the room manager(s) in charge of the room or the Administrative Service Center (ASC).

Meetings involving classified or safeguards information shall not be held in areas which are not been approved by Director, DFS. For additional information, contact Dan Cardenas, Chief, Facilities Security Branch, ADM (Daniel.Cardenas@nrc.gov; 301-415-6184).

If you require Guest LAN/Internet access in this conference room for your meeting, please visit the [OIS Customer Service Catalog Guest Network Services](#) page for more information. This page details the User Name and password information required for Guest access to the Internet from the room. NRC furnished mobile workstations normally connected to the NRC network do not require an additional password. If you require an audio conference speakerphone for your meeting, please call 301-415-7373.

If you have any questions or concerns about your conference room reservation, please contact Administrative Services Center (ASC) at 301-415-4ASC (4272). For questions about VTC, contact the VTC Operations Support Contractor at 301-415-4VTC (4882).

Please go to [ADM's web page](#) to get more information on how to create a conference room, equipment, or VTC reservation.

From: Milligan, Patricia
Sent: 11 May 2012 13:29:38 -0400
To: Brock, Terry
Subject: some comments
Attachments: Analysis of Cancer Risks in Populations near Nuclear Facilities.docx

mostly these folks annoyed me with their arrogance. and there repeated NRC bashing. a bit more context and a bit more honest discussion about the low dose issue and I would have been a fan. I certainly don't want to spend the \$\$\$ it will take to do this study. I am not sure that the "court of public opinion" to which these folks have appealed, would let us do anything less.

anyway, how are you?? interested to hear your thoughts about going forward.

Trish

Analysis of Cancer Risks in Populations near Nuclear Facilities: Phase 1

This is an interesting and well researched document. I have several specific comments on the document.

Summary:

The second paragraph of the summary on page S.1 states rather unequivocally that the NRC will carry out Phase 2, suggest that the following or something like it be inserted: "The results of this Phase 1 study will be used to assist NRC staff in determining if undertaking a Phase 2 study is appropriate and, should NRC staff decide to go forward with Phase 2, then these results can be used to inform the design of the cancer risk assessment."

The terms "uneven availability" and "quality of data" are not well defined or explained. Particularly troublesome are the following "...and data quality may be poor for some nuclear facilities" as well as "uncertainties in dose estimates may be much higher in years when effluent releases were highest." While I understand the meaning, I suspect it will be lost on many members of the public who read this document. I suggest adding a sentence or two to explain the meaning of "uneven availability" and "quality of data". It would also be useful to explain the concept of "uncertainties" in this context. What does that actually mean to the public?

Under Finding number 3:

"Environmental monitoring data have limited usefulness for estimating absorbed doses.... Or are not sensitive enough to allow for the development of useful dose estimates." I am not suggesting this isn't correct, but I question whether the "unknowledgeable" reader understands that is not an indictment against NRC regulations. There are many instances in this report where the language, while correct in its application, could be accompanied by an explanation understandable to the lay reader.

The last paragraph on page S.4 "Absorbed doses near nuclear facilities are anticipated to be low, in most cases well below variations in levels of natural background radiation....Consequently dose estimates used in a epi study would ideally account for these other sources..." This is lacking in context for the lay reader. If the doses are "well below" variations in levels of natural background and "other sources" one wonders what would be the usefulness of such a study ... how can you "tease out" NPP lower than trivial doses and determine any sort of impact? The lay reader may well be left with the thought that somehow "NPP" radiation is more "harmful."

Page S.6 "In making this decision, Commission will consider a number of factors, some of which are outside the charge for this Phase 1 study such as cost and priority of addressing public concerns about cancer risks.." suggest deleting everything after cost. Or is the intent of the NAS to bully the NRC into doing this study?

Page 1.5 "The committee attempted to identify study approaches that were scientifically sound and addressed public concerns."- did we identify both of those items in the tasking? If they are scientifically sound, then we ought to be able to "address public concerns" with sound science rather than attempt to develop a "scientific" study that considers "public concerns" as an important parameter.

Page 1.9 "The results of this Phase 1 scoping study will be used to inform the design....which will be carried out in Phase 2" suggest deleting everything after assessment and inserting "should the NRC choose to conduct Phase 2."

Page 2.1 3rd paragraph "The effluent release and meteorological data....are intended to demonstrate compliance with USNRC regulations. These data were not intended to be used for dose reconstruction.." I completely agree with this statement however it is lacking in context. Could they add something to the effect that compliance with USNRC regulation is protective of public health and safety??

Pg 2.11 first paragraph... "However if this finding is correct.." Really NAS? There appears to be a theme throughout this report that seems to attempt to undermine NRC and this is a good example of it.

Pg 2.20 second paragraph, last sentence "Air sample data...are not sensitive enough to estimate deposition of radionuclides....nor are analyses of soil or vegetation samples" I am a bit confused by what they mean in this statement... that analyzing soil and vegetation isn't good enough to determine deposition?

Pg 2.24 suggest deleting the entire last paragraph with the recommendation that we overhaul our regulations to facilitate studies at doses well below natural background.

Chapters 3 and 4 were interesting discussions. Discussion regarding the "low dose effect" uncertainty would add value to these discussion. I did not see anywhere in the report the merest discussion that maybe there are no effects from low dose radiation until you reached Appendix A. Some discussion earlier on, such as in the Summary would provide some context to the problem and for the reader.

Appendix A- paragraph 2 "In other words, there appears to be no threshold below which effects do not occur" perhaps the Committee members can cite some studies to support this statement. It is a bit too definitive. Suggest "Current scientific hypothesis suggest that "there is no threshold below which effects

do not occur, however, there are no definitive epidemiological studies to support this hypothesis. The proposed Phase 2 study could be additional data to help scientists understand the true impacts of low-dose radiation on human health”

From: Burnell, Scott
Sent: 1 Sep 2015 13:45:47 -0400
To: Brock, Terry
Subject: Sorry for sched confusion

Thought I'd already blocked off the appropriate days in my Outlook

Sent from an NRC Blackberry
Scott Burnell

(b)(6)

From: Burnell, Scott
Sent: 20 Jul 2015 06:11:18 -0400
To: Brock, Terry
Subject: Study Progress?

I'm out most of this week for the big exercise in SC, and I understand there's new indecision at the OD level about the path forward. Where are we at? Thanks.

Sent from an NRC Blackberry

Scott Burnell

(b)(6)

From: Ramsey, Kevin
Sent: 29 Jul 2014 10:41:33 -0400
To: Brock, Terry
Subject: There be boxes here!

Just received 34 of the 41 boxes. Want to come play in the paper?

From: Ramsey, Kevin
Sent: 27 Oct 2014 13:13:16 -0400
To: jheimberg@nas.edu;Kosti, Ourania (OKosti@nas.edu);Brock, Terry
Subject: Two more NFS documents

See below

From: Davis, Donna
Sent: Monday, October 27, 2014 12:09 PM
To: Ramsey, Kevin
Subject: Immediate Release Has Been Replicated - ML14297A289 - ML14297A288
[View ADAMS P8 Properties ML14297A289](#)
[Open ADAMS P8 Document \(Atomic Energy Commission - Redacted Environmental Measurements Around Nuclear Fuel Services July - October 1969.\)](#)
[View ADAMS P8 Properties ML14297A288](#)
[Open ADAMS P8 Document \(Nuclear Fuel Services, Inc., Redacted Description of Waste Management Program.\)](#)

If you have any questions or require additional information, you may contact the ADAMS Customer Support Center by sending an e-mail to ADAMS IM.

Thanks,

Donna Davis

NRC Document Processing Center

From: Ramsey, Kevin
Sent: Thu, 2 Oct 2014 16:35:28 -0400
To: Cardenas, Daniel;West, Garmon;Everly, JKeith;Johnson, Robert;Blamey, Alan;Erlanger, Craig;Bailey, Marissa
Cc: Brock, Terry;Pinckney, David;Baughman, Adam C CIV SEA 08 NR
(b)(6)
Subject: Update to Legacy Document Concern
Attachments: smime.p7s

Kevin Krogh in Naval Reactors informed me that the representatives attending the Fatigue Rule meetings scheduled for Tuesday in 3WFN are the same classifiers that would need to review the legacy documents. The current plan is to show them the legacy documents while they are here for the other meetings. It will allow them to get a better idea of the effort required.

From: Ramsey, Kevin
Sent: 22 Oct 2014 16:07:08 -0400
To: jheimberg@nas.edu;Kosti, Ourania (OKosti@nas.edu);Brock, Terry
Subject: Updated table for NFS stuff
Attachments: NFS Effluent Records Table for NAS Cancer Study.docx

attached

Effluent Records for
Nuclear Fuel Services
([NFS Effluent Records Table for NAS Cancer Study.docx](#))

Record Title	ADAMS Public Record
Biannual Effluent Monitoring Jan – Jun 2014	ML14251A017
Biannual Effluent Monitoring Jul – Dec 2013	ML14057A396
Biannual Effluent Monitoring Jan – Jun 2013	ML13254A069
Biannual Effluent Monitoring Jul – Dec 2012	ML13064A286
Biannual Effluent Monitoring Jan – Jun 2012	ML12249A027
Biannual Effluent Monitoring Jan – Jun 2011, Rev. 1	ML12059A303
Biannual Effluent Monitoring Jul – Dec 2011	ML12055A051
Biannual Effluent Monitoring Jan – Jun 2011	ML11249A064
Biannual Effluent Monitoring Jul – Dec 2010	ML110610416
Biannual Effluent Monitoring Jan – Jun 2010	ML102360147
Biannual Effluent Monitoring Jul – Dec 2009	ML100700519
Biannual Effluent Monitoring Jan – Jun 2009	ML092570831
Biannual Effluent Monitoring Jul – Dec 2008	ML090710718
Biannual Effluent Monitoring Jan – Jun 2008	ML082960743
Biannual Effluent Monitoring Jul – Dec 2007	ML081500695
Biannual Effluent Monitoring Jan – Dec 2007	ML072670156
Biannual Effluent Monitoring Jul – Dec 2006	ML070590627
Biannual Effluent Monitoring Jan – Jun 2006	ML080510464
Biannual Effluent Monitoring Jul – Dec 2005 Missing Page	ML061000099
Biannual Effluent Monitoring Jul – Dec 2005	ML060590265
Biannual Effluent Monitoring Jan – Jun 2005	ML060860092
Biannual Effluent Monitoring Jul – Dec 2004	ML051150075
Biannual Effluent Monitoring Jul – Dec 2004 Amendments	ML051150066
Biannual Effluent Monitoring Jan – Jun 2004	ML042600037
Biannual Effluent Monitoring Jul – Dec 2003	ML040760278
Biannual Effluent Monitoring Jan – Jun 2003	ML032720728
Biannual Effluent Monitoring Jul – Dec 2002	ML030690609
Biannual Effluent Monitoring Jan – Jun 2002	ML080510458
Biannual Effluent Monitoring Jul – Dec 2001	ML020710079
Biannual Effluent Monitoring Jan – Jun 2001	ML012490200
Biannual Effluent Monitoring Jul – Dec 2000	ML010650462
Biannual Effluent Monitoring Jan – Jun 2000	ML003746676
Biannual Effluent Monitoring Jul – Dec 1999	ML14260A302 Sent to DPC 9/17/14
Biannual Effluent Monitoring Jan – Jun 1999	ML003670798
Biannual Effluent Monitoring Jul – Dec 1998	received from Legacy Library 10/7/14, page missing
Biannual Effluent Monitoring Jan – Jun 1998	ML14248A618
Biannual Effluent Monitoring Jan – Jun 1998 Additional Info	ML14248A619
Biannual Effluent Monitoring Jul – Dec 1997	ML14248A617**

Record Title	ADAMS Public Record
Biannual Effluent Monitoring Jan – Jun 1997	ML14248A616 ** amended in ML14248A617
Biannual Effluent Monitoring Jul – Dec 1996	Sent to DPC 10/10/14 ** amended in ML14248A617
Biannual Effluent Monitoring Jan – Jun 1996	ML14248A463 ** amended in ML14248A617
Biannual Effluent Monitoring Jul – Dec 1995	ML14248A462 ** amended in ML14248A617
Biannual Effluent Monitoring Jan – Jun 1995	ML14248A461
Biannual Effluent Monitoring Jul – Dec 1994	received from Legacy Library 10/7/14, to DPC 10/10/14
Biannual Effluent Monitoring Jan – Jun 1994	received from Legacy Library 10/7/14, to DPC 10/10/14
Biannual Effluent Monitoring Jul – Dec 1993	received from Legacy Library 10/7/14, to DPC 10/10/14
Biannual Effluent Monitoring Jan – Jun 1993	ML14248A460
Biannual Effluent Monitoring Jan – Jun 1993 Amended	** see Jan – Jun 1994
Biannual Effluent Monitoring Jul – Dec 1992	ML14248A459
Biannual Effluent Monitoring Jan – Jun 1992	received from Legacy Library 10/7/14, to DPC 10/10/14
Biannual Effluent Monitoring Jul – Dec 1991	ML14248A458
Biannual Effluent Monitoring Jan – Jun 1991	received from Legacy Library 10/7/14, to DPC 10/10/14
Biannual Effluent Monitoring Jul – Dec 1990	ML14260A301 Sent to DPC 9/17/14
Biannual Effluent Monitoring Jan – Jun 1990	ML14251A300
Biannual Effluent Monitoring Jan – Jun 1990	received from Legacy Library 10/7/14, can't read
Biannual Effluent Monitoring Jul – Dec 1989	ML14260A300 Sent to DPC 9/17/14
Biannual Effluent Monitoring Jan – Jun 1989	ML14260A299 Sent to DPC 9/17/14
Biannual Effluent Monitoring Jul – Dec 1988	ML14251A299
Biannual Effluent Monitoring Jan – Jun 1988	ML14260A298 Sent to DPC 9/17/14
Biannual Effluent Monitoring Jul – Dec 1987	ML14260A297 Sent to DPC 9/17/14
Biannual Effluent Monitoring Jan – Jun 1987	ML14251A298
Biannual Effluent Monitoring Jul – Dec 1986	ML14251A297
Biannual Effluent Monitoring Jan – Jun 1986	ML14251A296
Biannual Effluent Monitoring Jul – Dec 1985	ML14251A295
Biannual Effluent Monitoring Jan – Jun 1985	ML14251A294
Biannual Effluent Monitoring Jul – Dec 1984	ML14251A293
Biannual Effluent Monitoring Jan – Jun 1984	ML14260A296 Sent to DPC 9/17/14
Biannual Effluent Monitoring Jul – Dec 1983	ML14251A110
Biannual Effluent Monitoring Jan – Jun 1983	ML14251A109

Record Title	ADAMS Public Record
Biannual Effluent Monitoring Jul – Dec 1982	ML14251A108
Biannual Effluent Monitoring Jan – Jun 1982	ML14251A107
Biannual Effluent Monitoring Jul – Dec 1981	Not found
Biannual Effluent Monitoring Jan – Jun 1981	Not found
Biannual Effluent Monitoring Jul – Dec 1980	Not found
Biannual Effluent Monitoring Jan – Jun 1980 [8009090504, 8009090507]	Requested from Legacy Library
Biannual Effluent Monitoring Jul – Dec 1979 Amended [8008280445]	Requested from Legacy Library
Biannual Effluent Monitoring Jul – Dec 1979	ML14251A106
Biannual Effluent Monitoring Jan – Jun 1979	ML14251A105
Biannual Effluent Monitoring Jul – Dec 1978	Not found
Biannual Effluent Monitoring Jan – Jun 1978	Not found
Biannual Effluent Monitoring Jul – Dec 1977	Not found
Biannual Effluent Monitoring Jan – Jun 1977 [8308160165]	Requested from Legacy Library
Biannual Effluent Monitoring Jul – Dec 1976	ML14251A104
Biannual Effluent Monitoring Jan – Jun 1976	Not found
Biannual Effluent Monitoring Jul – Dec 1975	ML14251A103
Biannual Effluent Monitoring Jan – Jun 1975	Not found
Redacted Letter responding to Senator Sasser re: Possible Discharge from NFS (dated 7/26/78)	ML14269A112
Tennessee Report of Monitoring Data (dated 8/30/76)	To DPC 10/10/14
Redacted Report re: Stack Concentration Exceeding Limit (dated 10/30/80)	To DPC 10/10/14
Stack Concentrations for June 1981 (dated 7/15/81)	To DPC 10/10/14
Gross Alpha Analysis for Environmental Air Samplers (dated 7/21/81)	To DPC 10/10/14
Concentrations Released from Main Stack (dated 4/24/84)	To DPC 10/10/14
Biannual Effluent Monitoring Report for July-December 1986 w/values not available in 2/27/87 report (dated 3/24/87)	To DPC 10/10/14
Evaluation of Possible Under-Reporting of Stack Effluent (dated 3/4/86)	To DPC 10/10/14
NPDES Permit Discharge Monitoring Report for February 1992 (dated 3/13/92)	To DPC 10/10/14
Concentrations Released from Plant Stacks in November 1982 (dated 12/14/82)	To DPC 10/10/14
<u>Plans for Remediating Areas of Pond 4 Outside of Building 410 (dated 2/8/95)</u>	<u>To DPC 10/22/14</u>
<u>Response to Senator Sasser re: Constituent Concerns About NFS (dated 11/4/92)</u>	<u>To DPC 10/22/14</u>

From: Milligan, Patricia
Sent: 8 Apr 2015 15:20:16 -0400
To: Brock, Terry
Subject: what would you say

The current status is of the pilot study?

I am going to forward an email from Nancy McNamara our RLSO in Rg 1.

From: Coffin, Stephanie
Sent: 30 Dec 2014 07:16:26 -0500
To: Tapp, Katherine
Cc: Brock, Terry;Tadesse, Rebecca
Subject: action/urgent - daily note - Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 2 Pilot Planning Report Release
Importance: High

Katie,

Can you put something together? Just a few sentences of summary including our next steps. Not sure if Terry and Rebecca already had something prepared and if they are monitoring email. I'll look to see if I have any information you can use.

Stephanie

-----Original Message-----

From: Sheron, Brian
Sent: Monday, December 29, 2014 6:55 PM
To: Case, Michael; Coffin, Stephanie; West, Steven
Subject: FW: Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 2 Pilot Planning Report Release

See below. make sure we get a CA note upstairs ASAP.

From: Interested parties list for activities pertaining to the Cancer Risk project [CANCERRISKSTUDY@LSW.NAS.EDU] On Behalf Of Greenleaf, Toni [TGreenle@NAS.EDU]
Sent: Monday, December 29, 2014 4:27 PM
To: CANCERRISKSTUDY@LSW.NAS.EDU
Subject: Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 2 Pilot Planning Report Release

DO NOT REPLY TO THIS EMAIL. IF YOU HAVE QUESTIONS PLEASE EMAIL CRS@nas.edu

Dear colleagues:

I am writing to inform you that the National Academy of Sciences (NAS) report titled "Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 2 Pilot Planning" was posted on the National Academies Press website earlier today. You can download a free copy of the report here: <http://www.nap.edu/catalog/18968/analysis-of-cancer-risks-in-populations-near-nuclear-facilities-phase>.

NAS had planned to release this report to the public at 11:00 am on January 5, 2015. Today's early release was in error. Please accept my apologies on behalf of NAS if this early release has disrupted your holiday plans.

Sincerely yours,

Kevin Crowley
Director
Nuclear and Radiation Studies Board

From: Case, Michael
Sent: 17 Aug 2015 12:17:21 -0400
To: Chen, Yen-Ju
Cc: Brock, Terry
Subject: Cancer Paper Revisions

Hi Yen. Do you have a sample of how to portray the out year budget information in an enclosure so I can get it out to Terry? Thanks for your help (it's almost over)!

From: Case, Michael
Sent: 14 Jul 2015 11:33:58 -0400
To: Brock, Terry;Tadesse, Rebecca;Coffin, Stephanie
Subject: Cancer Study: Alternative Conclusion
Attachments: Alternate Cancer Study Conclusion Paragraph.docx

Hi folks. Can you take a look at the attached? After your consideration, we can forward to Brian and Steve to support the ongoing discussion with Mike W.

Current SECY Conclusion Paragraph:

CONCLUSION:

After considering the three options above, staff felt the NCRP was a reasonable option to move forward. However, due to the current budget environment, the staff has decided to not move forward with this project at this time. The NRC staff initiated this project in an effort to be responsive to stakeholders concerns about cancer risks; however, the current budget environment has required the agency to prioritize its spending to focus on activities directly related to protecting public health and safety (e.g., inspections and licensing). The uncertainty in the NRC budget for the foreseeable future precludes the agency from spending any additional funds on this project.

Alternate SECY Conclusion Paragraph:

CONCLUSION:

After considering the two NAS and NCRP approach the staff plans to proceed with the NCRP in updating the 1990 NCI study **consistent with Commission budget guidance**. NCRP would provide a final report in a shorter time frame with a known completion date and budget. The NCRP update will be less modest than what NRC asked NAS to consider in anew update, but a direct update would be adequate for staff to discuss cancer risks than pursuing the lengthy options of either NAS approaches. The staff may re-engage NAS to perform the case-control study design for follow-up research if deemed necessary after the NCRP update is complete.

The staff estimates that the planned NCRP approach to the study will take 2-3 years to complete and will cost approximately \$2 million dollars. For 2016, the Commission **redirected contracting funds for the study to higher priority work**. **Therefore, the staff plans for 2016 will focus on formal estimates for the NCRP project and establishing the appropriate contracting vehicles**. **The staff planned for nominal funding to start the study in the operating reactor business line of the fiscal year 2017 budget**. **Funds to complete the study will be planned for the remaining years of the project** through the Planning, Budget, and Performance Management process.

From: Case, Michael
Sent: 14 Jul 2015 07:05:51 -0400
To: Tadesse, Rebecca; Brock, Terry
Cc: Coffin, Stephanie
Subject: Cancer Study--Alternate ending

Hi folks. Brian grabbed me late yesterday. His concern is that, as the paper stands today, it appears as if he is the one killing the Cancer study. He's uncomfortable with that because he thinks it is hard for him to explain why (in his \$55M budget) he doesn't have money for this. He checked with Bill Dean and it seems Bill supports it. He also talked to Elliot and he thought it would be a PR fiasco if we didn't do it. So Brian and I discussed what an alternative ending to the paper could be.

His alternative sounded a lot like the ending that we had before. I would like to noodle on that to see if we can pick up some of the items Brian mentioned and get that to him before he chats with Mike Weber. Can you send me a file with the "Current Ending" and an "alternate ending (from the first paper) and we can mark it up with Brian's insights.

Thanks

(we must have sounded too convincing when we told Brian we could get the money. He really was convinced that we could, even in FY16)

COMMUNICATIONS PLAN

ANALYSIS OF CANCER RISKS IN POPULATIONS LIVING NEAR NUCLEAR FACILITIES—PHASE 2 PILOT STUDIES

Introduction

The objective of this communication plan is to outline the Nuclear Regulatory Commission's (NRC) strategy for communicating the goals and key messages regarding the agency's next steps of the NRC-sponsored Analysis of Cancer Risks in Populations Living Near Nuclear Facilities study. This plan specifically addresses the recommendations made by the National Research Council of the National Academy of Sciences (NAS) in the Phase 1 report which concluded in May 2012.

Goals

This plan will help the NRC continue effective communications with internal and external stakeholders regarding the continuation of the project by undertaking the following tasks:

- **Promote** effective communications with internal and external stakeholders in a timely, consistent, and understandable manner.
- **Inform** all stakeholders that NRC and NAS carry out studies using processes designed to promote independence, transparency, objectivity, and technical rigor.
- **Identify** opportunities for educating the public regarding the impact of nuclear facilities on cancer mortality and incidence risk for populations surrounding those facilities.

Key Messages

The NRC will communicate the following key messages to all stakeholders:

1. In September 2013 the NRC directed the NAS to begin the second phase of a study on cancer mortality and incidence risks in populations living near seven NRC-licensed facilities. The NAS will create an up-to-date version of the 1990 U.S. National Institutes of Health-National Cancer Institute (NCI) report, "Cancer in Populations Living Near Nuclear Facilities—including a more thorough examination of cancer incidence.
2. In Phase 1, NAS developed approaches to evaluate cancer risks in populations living near NRC-licensed nuclear power and fuel cycle facilities. NAS developed methodological approaches for assessing offsite radiation dose and methodological approaches for assessing cancer epidemiology. The Phase 1 report identified two scientifically sound approaches for carrying out the assessment of cancer risks, and recommended a pilot study. The pilot study, referred to as Phase 2 Pilot, was recommended because of the technical challenges associated with carrying out

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assessments of cancer risks in populations near nuclear facilities in the United States and it was not clear which approach would be best or if either approach could produce meaningful results.

3. The committee recommended carrying out the cancer risk assessment through two types of epidemiology studies—an ecologic study of multiple cancer types of populations living near nuclear facilities and a case-control study of cancers in children born near nuclear facilities. These two study designs combine dose assessments with the ability to analyze many different cancer types, while also specifically focusing on children's cancer in the case-control study.
4. The committee proposed pilot studies at seven sites to determine the feasibility of performing the study designs on a larger scale. The NRC accepted NAS' suggested pilot study sites:
 - Dresden Nuclear Power Station, Morris, IL (2 BWRs, 1 BWR shutdown)
 - Millstone Power Station, Waterford, CT (2 PWRs, 1 BWR shutdown)
 - Oyster Creek Nuclear Generating Station, Forked River, NJ (1 BWR)
 - Haddam Neck (decommissioned), Haddam Neck, CT (1 PWR)
 - Big Rock Point Nuclear Power Plant (decommissioned), Charlevoix, MI (1 BWR)
 - San Onofre Nuclear Generating Station, San Clemente, CA (2 permanently shut down PWRs, 1 decommissioned PWR)
 - Nuclear Fuel Services, Erwin, TN (operating uranium fuel fabrication facility)

The committee selected these sites because they provide a good sampling of facilities in six states with different operating histories, population sizes, and levels of complexity in data retrieval from the state cancer registries.

5. The NAS study process is independent of NRC, transparent, objective, and technically rigorous, ensuring that the new study will be comprehensive and scientifically sound.
6. Following the pilot study, the NAS will provide a consensus report with the findings regarding the scientific feasibility of carrying out an assessment of cancer risks at additional U.S. NRC-licensed facilities. Staff will review the report and decide whether to proceed with Phase 2.

Appendix A provides responses to inquiries expected from the general public, congressional staff, the media, and other stakeholders. The appendices also include additional information for stakeholders who may be more familiar with these topics, such as elected officials, Federal and State Government officials, public interest groups, and certain members of the media.

Background

NRC regulations and licenses require each licensee to establish and maintain a program for monitoring radioactive effluents from their facilities. The regulations that govern these programs are Title 10 of the *Code of Federal Regulations* (10 CFR) Part 50.34a, —Design Objectives for

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Equipment to Control Releases of Radioactive Material in Effluents – Nuclear Power Reactors, 10 CFR Part 50.36a, —Technical Specifications on Effluents from Nuclear Power Reactors, and 10 CFR Part 50, —Domestic Licensing of Production and Utilization Facilities, Appendix I, —Numerical Guides for Design Objectives and Limiting Conditions for Operation To Meet the Criterion 'As Low as Is Reasonably Achievable,' for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents. NRC regulations in 10 CFR Part 50.36a require licensees to report these effluents in an annual radioactive effluent release report. Regulations for fuel cycle facilities effluent reporting are found in 10 CFR Part 70.59, —Effluent Monitoring Reporting Requirements, and 10 CFR Part 40.65, —Effluent Monitoring Reporting Requirements. All of these regulations ensure that offsite doses to individual members of the public are a small fraction of the 10 CFR Part 20 —Standards For Protection Against Radiation limits specified in 10 CFR 20.1301(a) and (e). The typical offsite doses to members of the public are generally less than 1% of the amount of radiation the average U.S. citizen receives in a year from all background sources. Nonetheless, some stakeholders have expressed recurrent concerns about the potential effect of these releases on the health of residents living near nuclear facilities.

To help address these stakeholder concerns, the staff uses the 1990 NCI report and other more recent epidemiology¹ reports conducted by various State Health Departments when communicating on cancer mortality in populations near nuclear power facilities. The staff relies on credible health studies to augment its discussions about the NRC's robust regulatory programs to keep offsite doses as low as reasonably achievable (ALARA) by providing public health information that directly applies to the health outcomes that are often of concern (i.e., cancer). However, the 1990 NCI report is now more than 20 years old, and more modern analysis methods, combined with up-to-date information sources, will provide contemporary cancer information in current populations living near NRC-licensed nuclear facilities. The state reports are generally of good quality, but are limited in the number performed and facilities covered. As a result, several NRC offices sent a user-need request to the Office of Nuclear Regulatory Research to update the NCI study. These epidemiological studies are not new or unique to the United States. Since 2008, Canada, France, Germany, Great Britain, Spain, and Switzerland have all conducted epidemiology studies of populations near nuclear facilities within their borders to address public health concerns. Generally these studies did not find elevated cancer risks, and if they did (e.g., Germany) the increased risk could not be attributed to the radiation released from the facilities.

Accordingly, the staff chose to provide a grant to NAS to perform the study. NAS agreed to take a two-phase approach. In Phase 1, NAS performed a scoping study that developed two approaches to evaluate cancer risks in populations living near nuclear power and fuel cycle facilities licensed by the NRC. NAS developed methodological approaches for assessing offsite radiation dose and for assessing cancer epidemiology. For Phase 2, NAS will perform the cancer risk assessment using the methods developed in Phase 1 at all NRC-licensed facilities. Because these are new methods with expected low statistical power² and different cancer data quality from state-to-state, NAS recommended pilot studies at 7 facilities to evaluate the feasibility of the Phase 1 methods.

¹ Epidemiology is the study of the distribution of illness, injury, disability, and death within a population.

² Statistical power tells the researcher how big of a sample size is needed to detect a health effect that can be attributed to a specific source. A study with too low statistical power is unlikely to be able to identify a health effect attributable to a specific source, even if it exists.

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The NRC accepted the NAS recommendations and asked the NAS to carry out the pilot study. NAS started the pilot planning phase in September 2013. The pilot study will have two steps: Pilot Planning and Pilot Execution. Planning activities include:

- Appointing the study committee;
- Identifying the processes for selecting qualified individuals and/or organizations to perform the technical tasks;
- Assessing the availability and quality of release and weather data;
- Investigating the use of existing dose-estimation models or the need to create a new model;
- Identifying state requirements for data sharing and transfer of health information;
- Obtaining Institutional Review Board approvals for the study, as appropriate; and
- Identifying key stakeholders and assessing their concerns, perceptions, and knowledge.

Pilot Execution phase activities include:

- Obtaining data on weather and nuclear facility airborne and waterborne releases turning the information into computer files that can be used for dose estimation;
- Using the computer model identified or developed in the planning phase to estimate absorbed doses to individual organs from monitored releases;
- Obtaining cancer incidence and mortality data at the census tract level to determine whether the population study can be carried out;
- Linking birth registration and cancer incidence data to identify eligible cases of childhood cancers and matched controls to determine whether the case control study can be carried out;
- Developing processes for public participation and for communicating with key stakeholders identified in the planning phase.

At the conclusion of the Pilot Execution step, the NAS will report its findings regarding the scientific feasibility and merit of carrying out a wider assessment of cancer risks near additional NRC-licensed facilities. The report will also include, if feasible, an analysis of cancer risks in the populations near the seven pilot facilities. NAS estimates the pilot study will take 2-3 years to complete.

Staff will review the report and decide on proceeding with Phase 2 for the balance of the operating nuclear power plants and fuel cycle facilities.

Audience/Stakeholders

Internal

- Commission
- Office of the Executive Director for Operations (OEDO)
- Advisory Committee on Reactor Safety (ACRS)
- Office of the General Counsel (OGC)
- Office of Congressional Affairs (OCA)
- Office of International Programs (OIP)
- Office of Public Affairs (OPA)
- Office of Nuclear Regulatory

External

- Congress
- Federal agencies
- Institute for Nuclear Power Operations
- Electric Power Research Institute
- Nuclear Energy Institute
- Conference of Radiation Control Program Directors
- Organization of Agreement States
- Agreement States
- news media (e.g., *Inside NRC*)

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- Research (RES)
- Office of New Reactors (NRO)
- Office of Nuclear Reactor Regulation (NRR)
- Office of Nuclear Security and Incident Response (NSIR)
- Office of Federal State Materials and Environmental Management Programs (FSME)
- Office of Nuclear Material Safety and Safeguards (NMSS)
- Regions I-IV
- International Atomic Energy Agency
- nuclear regulators of other countries
- residents living near nuclear power plants
- State and local governments
- public interest groups (e.g., Union of Concerned Scientists)
- academic and professional organizations (e.g., Health Physics Society, American Nuclear Society)
- NRC licensees
- International Organizations (e.g., NEA, IAEA, ICRP)
- Foreign governments of countries with similar facilities

Communication Team

The Communication Team will assist the Team Leader as needed in developing uniform and accurate messages, initiating communication vehicles, and coordinating implementation plans for this project. The members of the Regional Communication Team will be responsible for coordinating communication within their regions.

<u>Position</u>	<u>Name</u>	<u>Organization</u>	<u>Telephone Number</u>
<i>Team Leader</i>	Terry Brock	RES	(301) 251-7487
<i>NMSS Lead</i>	Marilyn Diaz	NMSS	(301) 287-9068
<i>NRR Lead</i>	Steven Garry	NRR	(301) 415-2766
<i>NRO Lead</i>	Jean-Claude Dehmel	NRO	(301) 415-6619
<i>NSIR Lead</i>	Trish Milligan	NSIR	(301) 415-2223
<i>Region I Lead</i>	Ron Nimitz	RI	(610) 337-5267
<i>Region II Lead</i>	Gena Woodruff	RII	(404) 997-4739
<i>Region III Lead</i>	John Cassidy	RIII	(630) 829-9667
<i>Region IV Lead</i>	Don Stearns	RIV	(817) 200-1176
<i>State Liaison Lead</i>	June Cai	FSME	(301) 415-5192
<i>Legal Lead</i>	Beth Mizuno	OGC	(301) 415-3122
<i>Public Affairs Lead</i>	Scott Burnell	OPA	(301) 415-8204
<i>International Programs</i>	Andrea Jones	OIP	(301) 415-2309
<i>Congressional Affairs</i>	Gene Dacus	OCA	(301) 415-1697
<i>Congressional Affairs</i>	Jenny Weil	OCA	(301) 415-1691
<i>OEDO Lead</i>	Lance Rakovan	OEDO	(301) 415-2589

Communication Tools

Tool

NRC External Web Site

Description/Purpose

The NRC's external website will provide links to the NAS study web page, to the NCI Web page and to other related publicly available documents.

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Internal Briefings	The Communication Team will conduct internal briefings at various points in the process to keep internal stakeholders informed of its activities and messages.
Weekly Highlights and EDO Daily Notes	The weekly highlights and/or EDO Daily Notes will report on significant milestones.
Internet E-Mail	The Communication Team will e-mail significant information on the status of the study and deliverables to internal stakeholders.
Commissioners' Assistants Notes	Commissioners' Assistants Notes will be used to communicate information about public meetings, study status, and other items of significant interest

Tool

Description/Purpose

Commissioner Interactions	The Communication Team will coordinate and assist in preparing briefing materials for the interactions of Commissioners with various stakeholders.
Public Meetings	If necessary, public meetings could be held to discuss the final study report after NAS has briefed the staff and/or Commission on the findings and a Commission-approved message has been developed.
Issuance of Significant Correspondence	The project manager will coordinate the issuance of correspondence with key internal and external stakeholders. The Communication Team will coordinate with OPA when preparing press releases and interacting with the media.
Congressional Communications	OCA will coordinate all communication with Congress.
Media Communications	OPA will coordinate all communication with the media.

Communications Activities

<u>Activity</u>	<u>Responsibility</u>	<u>Date Planned</u>
Press Release on Pilot Study Award	RES/OPA	Sept. 2013

NAS Committee Selection	NAS	Nov. 2013
Kick-off presentation	RES	Dec. 2013
Presentations at future meetings	RES/NRC staff	TBD
Press Release of Planning Phase Results	RES/OPA	Sept. 2014
Press Release on Start of Pilot Execution Phase	RES/OPA	Dec. 2014
Communicate pilot study results	NAS/RES/OPA	May. 2016
NRC evaluates the results of the pilot study and decides whether or not to continue with the next phase.	RES/NRC Staff	Dec. 2016

Communication Challenges

The Communication Team is likely to encounter challenges in the following two areas while implementing this plan:

(1) Effective Communication with the General Public

This study and its results will be of significant interest to the general public, particularly those members of the general public who live within the areas analyzed in the study. All NRC-produced materials must take into account the limited technical background of some stakeholders and the sensitivity of issues relating to cancer. In addition, various stakeholder groups have expressed concern with perceived elevated cancer risks in populations that live near nuclear facilities.

(2) Public Perceptions of the NRC and the NAS

Communications regarding this study should address the frequent misconception among some stakeholders that the NRC promotes the use of nuclear power (i.e., to generate electricity). In addition, communication efforts must stress the NAS was established by Congress to provide scientific information and advice to the government, and that any NAS report will be independent of the NRC and reflect the Academy's best judgment.

Updates and Revisions

If major revisions to this plan or its key messages are necessary, the Team Leader will ensure that a formal revision is made and placed in the Agencywide Documents Access and

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Management System and on the internal communications Web page. The Team Leader will also determine the need for updates to the questions and answers in Appendix A to this plan. These updates will not constitute a revision to this plan.

As needed, the Communication Team will assess the degree of success that key messages and talking points have with the target stakeholder audience, and will modify/adjust the key messages as necessary.

The Team Leader will brief key staff as needed regarding revisions to the messages, talking points, or guidance based on immediate concerns or questions asked by the stakeholder audience.

Final Closeout

At the conclusion of the study, the Team Leader will prepare a brief closeout statement about the challenges and successes related to the communication plan and attach it to the end of the last revision.

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**Appendix A
Questions and
Answers**

Q1. Why has the U.S. Nuclear Regulatory Commission (NRC) asked the National Academy of Sciences (NAS) to conduct this study now?

A1. This study will provide the NRC staff with the most current scientific information for responding to stakeholder concerns related to cancer mortality and incidence rates for populations that live near past, present, and proposed nuclear power facilities. The NRC staff has used a 1990 study conducted by the National Cancer Institute (NCI), "Cancer in Populations Living near Nuclear Facilities," as a valuable risk communication tool for addressing stakeholder concerns about cancer mortality attributable to the operation of nuclear power facilities. However, the NCI report is over 20 years old and a new study needs to be performed to reflect the current populations living near nuclear power facilities. In addition, the analyses in the NCI report focus on cancer deaths, and the general public is often also interested in cancer incidence (e.g., being diagnosed with cancer, but not necessarily dying from the disease). Therefore, the NAS project will also assess cancer incidence in addition to mortality.

Q2. Why is NAS, rather than NCI, conducting this follow-up study to NCI's 1990 work?

A2. The NRC staff approached NCI management about performing a new study under contract to the NRC, but because of staffing limitations, NCI was unable to commit resources for this activity for the foreseeable future. NAS will draw its project team from a wide range of technical experts, which could include NCI members.

Q3. Which seven sites will be included in the pilot study?

A3. The pilot sites to be included in the pilot study are the Dresden Nuclear Power Station in Illinois, the Millstone Power Station in Connecticut, the Oyster Creek Nuclear Generating Station in New Jersey, the Haddam Neck in Connecticut (decommissioned), the Big Rock Point Nuclear Power Plant in Michigan (decommissioned), the San Onofre Nuclear Generating Station in California (permanently shut down), and the Nuclear Fuel Services facility in Tennessee.

Q4. Which additional nuclear facilities could be included in the study?

A4. The NRC could ask NAS to study all NRC-licensed nuclear power reactors and fuel cycle facilities (e.g., fuel enrichment and fabrication plants) that are or were in operation in the United States, however this will depend on the results of the pilot studies and NRC staff review.

The 1990 NCI report included all 52 commercial nuclear power facilities in the United States

that that started operation before 1982. Preliminary information indicates that 25 new reactor sites have begun operation since 1982. The 25 new reactor sites will also be included in the study. Researchers are identifying the study and control populations for these sites for inclusion in the cancer mortality study.

Q5. How does the NAS project consider cancer incidence (occurrence)?

A5. The NAS is expected to gather cancer incidence data from individual States health databases. When NCI conducted its 1990 study, cancer incidence information was only available for counties adjacent to four facilities located in Iowa and Connecticut. The limited cancer incidence data for these counties resembled the counties' mortality data patterns.

Q6. Does the NRC suspect that cancer mortality rates are elevated around nuclear power plants?

A6. The staff does not believe the low doses from the routine operations of NRC-licensed facilities would result in observable elevated rates of cancer in the populations. The NAS Phase 1 committee's decision to not calculate sample sizes based on actual off-site doses confirms the staff position that at the low offsite doses from these facilities, researchers would not expect to observe any increased cancer risks in the populations surrounding these facilities attributed to the regulated release of radioactive effluents. Nevertheless, the staff believes that despite these potential limitations and expected outcomes, the studies would be helpful to address public health concerns and are therefore still worthwhile to pursue.

Q7. How can I be sure that the nuclear power plant is not causing cancer? If I lived near a power plant, how might I be exposed to radiation? For example, if my house is 2 miles away from a reactor, am I being exposed whenever I am at my house?

A7. In the previous study NCI found no increased risk of cancer in those people who lived in counties near nuclear facilities. Nuclear facilities release very small regulated amounts of radioactivity, at very slow rates into the environment. The amounts released are strictly controlled within limits set by the NRC and the U.S. Environmental Protection Agency. Any exposures that may occur are below the established safety limits. The radioactive emissions from nuclear power plants only contribute a very small fraction (1/1000th) of our yearly total radiation exposure (approximately 0.1 percent). For comparison, your radiation exposure from natural radiation sources in soil and rocks, radon gas in homes, radiation from space, and other sources that are naturally found within the human body contributes to approximately 50 percent or 500 times more radiation than from nuclear facilities. The other half of your yearly exposure (also 500 times more radiation than nuclear facilities) is from man-made sources, such as consumer products, medical procedures, and to a much lesser extent, industrial sources.

Q8. Which age groups are included in the study?

A8. The NRC expects the NAS pilot study project to analyze cancer incidence and mortality rate data for the following age groups: 0-4 years, 5-9 years, 10-19 years, 20-39 years, 40-59 years, and 60 years and older.

Q9. Will the study address cancer rates from leukemia in children near nuclear facilities?

A9. Yes. The study will address leukemia in all age groups, including children (0-5 years).

Q10. Why are children looked at specifically in the case-control study?

A10. Children exposed to radiation tend to be more sensitive to cancer effects than adults and any health effect should show up in this population first.

Q11. I live near a nuclear power plant and my husband died of cancer. Will this study prove that living near the plant caused the cancer?

A11. No, the study is designed to survey trends in populations and does not evaluate the cause of individual cases. However, the study does give us an indication if the cancer rates of populations near nuclear facilities are the same, greater, or less than what is expected.

Q12. Are such studies able to detect population health effects from industrial sources?

A12. Yes. NCI has effectively used county-based studies in the past to study cancer mortality rates. For example, NCI has used county-based studies to show elevated rates of lung cancer deaths in counties with shipyard industries and in counties with arsenic-emitting smelters and refineries.

Q13. Were past studies, such as the French and German studies on childhood leukemia and radiation from nuclear power plants, being considered?

A13. Yes, these studies were considered by the phase 1 expert committee when writing their recommendations in the phase 1 report, in addition to other international studies.

Q14. Why do some local cancer studies around some nuclear plants show increased cancer rates and some show no increase?

A14. Numerous local cancer studies that have been performed by local groups near nuclear plants show an increase in cancer. These local studies are sometimes based on small populations or groups and may or may not be influenced by local confounding factors, such as eating habits, cigarette smoking, and chemical exposures. In addition, some studies may not be using scientifically accepted epidemiology methods and as such may not be credible. Any local cancer studies should be submitted to the State Health Department, or possibly to the U.S. Department of Health and Human Services, Agency for Toxic Substances and

Disease Registry.

However, the NRC has evaluated the radiation levels from radioactive effluents and radiation from nuclear power plants and found that the levels are very low. Therefore, even with a conservative linear, no-threshold assumption, the corresponding cancer risk is very low.

Q15. Where can I find the NAS protocols on the study process, including committee selection and technical reviews?

A15. The NAS study protocols (<http://www.nationalacademies.org/studyprocess/index.html>) include procedures for member selection and rigorous review of the project's findings.

Q16. How will the NRC consider this resulting data in new reactor reviews and relicensing decisions?

A16. The NRC will use the results of the study to answer recurring questions from our stakeholders during the public comment period for regulatory actions. If necessary the results could prompt further review of both new reactor and existing regulations to ensure the effluent and direct radiation exposure dose limits adequately protect public health and safety.

Q17. What will the NRC do if the results indicate an increase in cancer risk in some populations that live near a specific nuclear facility?

A17. While the NAS project is still ongoing, the NRC expects any increases in cancer risk will first be assessed against the levels of radiation dose attributable to strictly regulated radioactive materials released during plant operation, as well as any public radiation dose that might result from the releases. This data would assist NAS in examining any relationship between the study results and potential radiation exposures of the public at individual plants. Furthermore, the public radiation doses from operating plants are significantly below the radiation safety dose limits set to protect the public and are a small fraction of dose received from natural background. If there continues to be a concern then more refined epidemiology studies can be performed (e.g., case-control study).

Q18. I live near a nuclear power plant or in near of the proposed pilot study sites. Will I be contacted during this study for information? Will my family or personal medical information be protected during this study or during a cancer incidence study?

A18. The NAS study process includes opportunities for the public to contribute, but the data used in this study will be obtained from anonymous state and national sources. These data do not contain personal identifying information making it impossible to determine to whom the medical information belongs.

Q19. Why did the NRC switch from Oak Ridge Associated Universities (ORAU) to NAS as a study provider after one year of work?

A19. The staff has reconsidered using ORAU to do the work due to the possibility of high public interest in the topic and the importance of the project to the agency. The decision not to use ORAU was not an indication of any deficiencies in the technical quality of ORAU's work, but more of ensuring that the investigator brings a broad social and national policy perspective to the study. As such, the staff chose the NAS to perform the study.

Q20. What is the status of the project and how will the NRC decide on the next step and has funding been reserved?

A20. NAS released the phase 1 report on March 29, 2012. The staff reviewed the report and communicated to the Commission in SECY-12-0136 that staff will pursue the NAS recommended approach to perform pilot studies at 7 sites. The pilot study is being performed in two steps: pilot planning and pilot execution. NAS started the pilot planning phase in September 2013 and will be completed in one year. At the conclusion of the Pilot Execution step, the NAS will report its findings regarding the scientific feasibility and merit of carrying out a wider assessment of cancer risks near additional NRC-licensed facilities. NAS estimates the pilot study will take 2-3 years to complete.

At the conclusion of the pilot study, the staff will review and consider the report recommendations and stakeholder comments to determine whether to analyze additional facilities. The OPA backgrounder for the study can be found on the NRC website at <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/bg-analys-cancer-risk-study.html>.

Q21. How does the NRC ensure the validity of the licensee's reporting of off-site doses and environmental monitoring results?

A21. The licensee is required to establish, implement, and maintain an acceptable effluent and environmental monitoring program. As such the licensee has the primary responsibility to ensure conformance with all applicable requirements in the area of effluent and environmental monitoring. The NRC performs selective inspections of the program to validate that the licensee is implementing such a program and that public doses are maintained well below regulatory requirements and are in fact as low as reasonably achievable. The following points illustrate this approach:

- 1) NRC has imposed strict regulatory requirements for conduct of both station effluent monitoring control and environmental monitoring. These requirements are designed to ensure licensee doses to members of the public are well below regulatory limits and are as low as reasonably achievable. Consequently, licensees are obligated to establish, implement, and maintain programs to sample, monitor, evaluate, and control effluents. The licensee is also required to collect and analyze environment samples to detect activity associated with facility operations. The sampling program

is designed to review exposure pathways and sampling results. The environmental monitoring program is designed to provide a check on the station effluents control program.

- 2) The NRC has established reporting requirements that require the licensee to report effluent and or environmental monitoring issues as established in program requirements. NRC initiates appropriate reviews and evaluation of the reports and conducts follow-up inspections as appropriate.
- 3) The NRC conducts routine inspections in a variety of ways. The NRC maintains an onsite resident inspection staff that selectively and routinely reviews on-going activities to become aware of issues that may impact effluent or environmental monitoring including public dose. For example the residents review corrective action documents to evaluate potential impact on the effluents control program. The residents also review radiation monitors for indication of releases. During their inspections residents also look for potential unmonitored release paths.
- 4) The NRC also uses specialist inspectors, independent of the resident staff, to conduct periodic onsite inspections of both effluent release and environmental monitoring programs to ensure the licensee conforms with applicable requirements. As part of this review, NRC inspectors also review ground water controls. The inspectors evaluate the adequacy of quality assurance of measurements to ensure they are of appropriate quality and that the licensee is implementing a robust quality assurance program.
- 5) The NRC routinely reviews secondary evaluations conducted as part of the licensees' quality assurance programs (e.g., audits and assessments) as well as independent measurements conducted by other regulatory entities (e.g., state monitoring programs).
- 6) In addition, and as necessary, the NRC conducts independent confirmatory sampling to validate the accuracy of licensee measurements.
- 7) Information provided to the NRC by a licensee must be complete and accurate in all material respects. Submitting falsified information to the NRC is considered a violation of the regulations and will have severe implications. (For additional information, please refer to the [Enforcement Policy](#).)

Q22. How does SONGS shutdown status impact its participation in the pilot study?

A22. The SONGS shutdown will not impact its participation in the pilot study. The facility has a long operating history and past exposures can still be evaluated and provide useful input to the pilot study effort.

Q23. Where can the public find more information on the study?

A23. NAS has a study website at <http://dels.nas.edu/global/nrsb/CancerRisk>
NRC's fact sheet on the study can be found at <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-analys-cancer-risk-study.html>. Staff's communication with the Commission on the status of the study at <http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2012/2012-0136scy.pdf>

Q23. Where can the public find more information on the study?

A23. NAS has a study website at <http://dels.nas.edu/global/nrsb/CancerRisk>
NRC's fact sheet on the study can be found at <http://www.nrc.gov/reading-rm/doc-collections/fact-sheets/fs-analys-cancer-risk-study.html>. Staff's communication with the Commission on the status of the study at <http://www.nrc.gov/reading-rm/doc-collections/commission/secys/2012/2012-0136scy.pdf>

ADAMS Accession No.: ML13274A664

OFFICE	RES/DSA/RPB	RES/DSA/RPB	BC:RES/DSA/RPB	R:RES/DSA	D:RES
NAME	S. Hawkins	T. Brock	S. Bush-Goddard	K. Gibson	B. Sheron
DATE	10/02/13	10/29/13	11/04/13	11/04/13	11/22/13

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From: Case, Michael
Sent: 12 Jan 2015 08:58:40 -0500
To: Sheron, Brian;West, Steven
Cc: Coffin, Stephanie;Tadesse, Rebecca;Brock, Terry
Subject: FW: 1990 NCI County Cancer Study Cost

FYI. I think this was one of our look ups from our interactions on the Cancer Study last year.

From: Brock, Terry
Sent: Friday, January 09, 2015 9:49 AM
To: Case, Michael
Cc: Coffin, Stephanie; Tadesse, Rebecca
Subject: 1990 NCI County Cancer Study Cost

Hi Mike

I spoke to Dr. John Boice and he estimated it took the National Cancer Institute 2-3 years and about \$1,000,000 in today's dollars (~\$500k in 1990) to complete the original county-based ecologic cancer study. The study was primarily intramural research within NCI's Radiation Epidemiology Branch--John was Chief at the time so the estimate is probably pretty reasonable.

Terry Brock, Ph.D.

Office of Nuclear Regulatory Research

U.S. Nuclear Regulatory Commission

Washington D.C. 20555

Mail Stop CSB-3A07

phone: 301-251-7487

From: Bush-Goddard, Stephanie
Sent: 22 Feb 2012 16:20:14 -0500
To: Brock, Terry
Cc: Tomon, John;Humberstone, Matthew;Diaz, Marilyn
Subject: FW: ACTION: Concurrence needed - ACTION: Cancer Risk Study - Phase 1
Attachments: 120216_RLC_RLC Comments on the cancer study_Fact Verification.docx

A gift for Terry.

-Steph

From: Pope, Tia
Sent: Wednesday, February 22, 2012 4:18 PM
To: Bush-Goddard, Stephanie
Subject: FW: ACTION: Concurrence needed - ACTION: Cancer Risk Study - Phase 1

From: Shoop, Undine
Sent: Tuesday, February 21, 2012 6:25 PM
To: Pope, Tia
Cc: Cruz, Holly; Richards, Karen
Subject: FW: ACTION: Concurrence needed - ACTION: Cancer Risk Study - Phase 1

Tia,

Please see attached comments from AHPB.

Undine

From: Giitter, Joseph
Sent: Tuesday, February 21, 2012 6:23 PM
To: Shoop, Undine; Lee, Samson; Pope, Tia
Cc: Richards, Karen
Subject: RE: ACTION: Concurrence needed - ACTION: Cancer Risk Study - Phase 1

Undine—The comments look good to me.

From: Shoop, Undine
Sent: Tuesday, February 21, 2012 6:14 PM
To: Giitter, Joseph; Lee, Samson
Cc: Richards, Karen
Subject: ACTION: Concurrence needed - ACTION: Cancer Risk Study - Phase 1
Importance: High

Joe and Sam,

AHPB reviewed the document and has several comments which are provided in the attached. If you agree, please forward this to Tia Pope. This is due on the 22. In the below e-mail it

indicates that a YT would be assigned to this but I do not recall and cannot find a YT for this action.

Undine

From: RidsNrrMailCenter Resource
Sent: Friday, February 10, 2012 4:46 PM
To: RidsNrrDra Resource
Cc: Shoop, Undine; Heida, Bruce
Subject: ACTION: Cancer Risk Study - Phase 1

Attached is an action item from RES seeking NRR comments on NAS Report "Analysis of Cancer Risk in Populations Near Nuclear Facilities – Phase 1," by February 22, 2012.

I will issue the yellow ticket once the TAC number has been assigned.

Thanks,
Patti

From: Pope, Tia
Sent: Friday, February 10, 2012 4:10 PM
To: RidsFsmeOd Resource; RidsNrrMailCenter Resource; RidsNmssOd Resource; Brock, Terry
Subject: Cancer Risk Study - Phase 1

From: Coffin, Stephanie
Sent: 27 Aug 2015 16:05:33 -0400
To: Brock, Terry; Tadesse, Rebecca
Subject: FW: Cancer Study Press Release
Attachments: Cancer_study_end.docx

This looks better to me – what do you think?

From: Burnell, Scott
Sent: Thursday, August 27, 2015 3:50 PM
To: Sheron, Brian <Brian.Sheron@nrc.gov>
Cc: Coffin, Stephanie <Stephanie.Coffin@nrc.gov>; Case, Michael <Michael.Case@nrc.gov>; West, Steven <Steven.West@nrc.gov>
Subject: RE: Cancer Study Press Release

I've incorporated the high points from our conversation. How's this version look?

From: Sheron, Brian
Sent: Thursday, August 27, 2015 2:47 PM
To: Burnell, Scott <Scott.Burnell@nrc.gov>
Cc: Coffin, Stephanie <Stephanie.Coffin@nrc.gov>; Case, Michael <Michael.Case@nrc.gov>; West, Steven <Steven.West@nrc.gov>
Subject: Cancer Study Press Release

We've got comments. Changes needed before I can concur.

OPA

DRAFT

(Source: RES)

NRC ENDS WORK ON NATIONAL ACADEMY OF SCIENCES

CANCER RISK PILOT STUDY

The NRC is [ceasing work](#) [link to SECY page if this link isn't live] on a National Academy of Sciences (NAS) pilot study of cancer risks in populations near U.S. nuclear power facilities. The NRC determined that continuing the work was impractical, given the significant amount of time and resources needed and the agency's current budget constraints.

The NRC continues to find U.S. nuclear power plants comply with strict requirements that limit radiation releases from routine operations. The NRC and state agencies regularly analyze environmental samples from near the plants. These analyses show the releases, when they occur, are too small to cause observable increases in cancer risk near the facilities.

“We’re balancing the desire to provide updated answers on cancer risk with our responsibility to use Congressionally-provided funds as wisely as possible,” said Brian Sheron, director of the NRC’s Office of Nuclear Regulatory Research. “The NAS estimates it would be at least the end of the decade before they would possibly have answers for us, and the costs of completing the study were prohibitively high.”

The NAS, while stating the study's approach was scientifically sound, has repeatedly described significant challenges to completing the project. Most importantly, the latest NAS proposal said: "any data collected during the pilot study will have limited use for estimating cancer risks in populations near each of the nuclear facilities or for the seven nuclear facilities combined because of the imprecision inherent in estimates from small samples." The NAS proposed study methods are available in public reports on [Phase 1](#) and [Phase 2](#) of the effort to date.

###

From: Brock, Terry
Sent: 9 Sep 2015 16:54:42 +0000
To: Burnell, Scott
Subject: FW: CONFIRMATION - Letter to NAS

FYI: [Open ADAMS P8 Document \(Letter to K. Crowley for ending the "Analysis of Cancer Risks in Populations near Nuclear Facilities"\)](#)

From: Weber, Michael
Sent: Wednesday, September 09, 2015 12:41 PM
To: Sheron, Brian <Brian.Sheron@nrc.gov>; West, Steven <Steven.West@nrc.gov>
Cc: Case, Michael <Michael.Case@nrc.gov>; Coffin, Stephanie <Stephanie.Coffin@nrc.gov>; Tadesse, Rebecca <Rebecca.Tadesse@nrc.gov>; Rosales-Cooper, Cindy <Cindy.Rosales-Cooper@nrc.gov>; Foster, Jack <Jack.Foster@nrc.gov>; Chen, Yen-Ju <Yen-Ju.Chen@nrc.gov>; Rihm, Roger <Roger.Rihm@nrc.gov>
Subject: CONFIRMATION - Letter to NAS

OCA shared your letter to NAS with our Congressional contacts.

From: Weil, Jenny
Sent: Wednesday, September 09, 2015 12:30 PM
To: Weber, Michael <Michael.Weber@nrc.gov>
Subject: RE: RESPONSE - Letter to NAS

Hi Mike, we did pass along the letter to the Hill.

From: Weber, Michael
Sent: Wednesday, September 09, 2015 9:28 AM
To: Weil, Jenny <Jenny.Weil@nrc.gov>
Subject: RESPONSE - Letter to NAS

Sure thing. Can you inform me when we have shared with the Hill?

From: Weil, Jenny
Sent: Wednesday, September 09, 2015 9:25 AM
To: Weber, Michael <Michael.Weber@nrc.gov>
Subject: RE: ACTION - Letter to NAS

Thanks Mike!

From: Weber, Michael
Sent: Wednesday, September 09, 2015 8:56 AM
To: Dacus, Eugene <Eugene.Dacus@nrc.gov>; Colgary, James <James.Colgary@nrc.gov>
Cc: Weil, Jenny <Jenny.Weil@nrc.gov>; Decker, David <David.Decker@nrc.gov>; Rihm, Roger <Roger.Rihm@nrc.gov>
Subject: ACTION - Letter to NAS

Good morning, Gene and Jim. Big day for the hearing this morning.

Attached is the letter that Brian Sheron sent to the National Academy of Sciences today (I thought he had signed it yesterday, but apparently it was not sent, following his discussion with NAS yesterday morning). Please share the letter with our oversight and appropriations committees for their awareness.

Thanks

From: Sheron, Brian
Sent: 19 Aug 2015 18:00:21 -0400
To: Case, Michael; Coffin, Stephanie; Tadesse, Rebecca; Brock, Terry
Subject: FW: FYI - CONCLUSION FOR THE NATIONAL CANCER RISK SECY PAPER

FYI.

From: Weber, Michael
Sent: Wednesday, August 19, 2015 5:57 PM
To: Satorius, Mark ; Johnson, Michael ; Ash, Darren
Cc: Chen, Yen-Ju ; Pham, Bo ; Rasouli, Houman ; Sheron, Brian ; West, Steven
Subject: FYI - CONCLUSION FOR THE NATIONAL CANCER RISK SECY PAPER

Good afternoon. I just had a discussion with Brian Sheron regarding the conclusion to the SECY paper on the national cancer risk study (updating the 1990 National Cancer Institute study). Brian agrees not to move forward with the update to the 1990 NCI study at this time, pending the results of the Million Person Study already underway with NCRP. He read to me over the phone some alternative language for the conclusion that is based on what we sent over, and is prepared to collaborate with the customer offices on whether they, too, can support this approach. He was trying to avoid the impression that the EDO did not support the study, but the staff offices wanted to proceed. I can support something like this revised language. He will work with his staff to incorporate more insights on the timing of the Million Person Study (how many years until completed) to better inform the Commission when might the staff be back with a follow-on decision on the national cancer risk study. The logic is that if the Million Person Study does not show any significant cause and effect between radiation worker exposures and cancer rates (with much higher doses and much better controls on exposures, generally), then there would be very limited utility in moving forward with the update to the NCI study. On the other hand, if the results of the Million Person Study are uncertain or suggest a cause and effect, then there could be merit in proceeding with the update to the 1990 NCI study. However, the staff would reach that decision down the road and it would be influenced by a variety of factors at that time, including agency priorities, resources, and workload. Brian caveated this approach by noting that DOE support for the Million Person Study might be drying up due to budget constraints. Staff may need our assistance in convening a discussion with DOE senior leadership (Assistant Secretary for Science level) to help sustain the present funding for a timely conclusion of the Million Person Study.

Thanks,

Mike

Michael Weber
Deputy Executive Director for Materials, Waste, Research,
State, Tribal, and Compliance Programs
U.S. Nuclear Regulatory Commission
301-415-1705
Mail Stop O16E15



From: Ramsey, Kevin
Sent: 21 Jul 2014 14:12:51 -0400
To: Brock, Terry
Subject: FW: NAS representative for Public Outreach Meeting

Jim Hickey in RII has the lead for the public meeting, so I would consider this approval to invite Dr. Kosti.

From: Hickey, James
Sent: Monday, July 21, 2014 12:30 PM
To: Ramsey, Kevin
Cc: Hickey, James; Johnson, Robert; Mendez-Gonzalez, Sandra; Rivera, Carmen; Hartland, David; Brock, Terry
Subject: Re: NAS representative for Public Outreach Meeting

As this is an area ECAN is interested in I would say yes. I think there would be some value in a short presentation of the study goals and methods for a general public audience. I think the actual proposal to the commission is later this year.

Regards,
Jim

Sent via My Workspace for iOS

On Monday, July 21, 2014 at 10:44:36 AM, "Ramsey, Kevin" <Kevin.Ramsey@nrc.gov> wrote:

Terry Brock in RES says Dr. Ouriana Kosti from the National Academies of Science (OKosti@nas.edu) can attend the public outreach meeting scheduled for 9/30. Does everyone concur with inviting her?

-----Original Message-----

From: Brock, Terry
Sent: Friday, July 18, 2014 10:51 AM
To: Ramsey, Kevin
Subject: RE: NFS in the News

Kevin,

I checked with Rania of NAS and she can attend the meeting if we want her there. I recommend she come so NAS can hear first hand the concerns. Ok to invite her?

Terry

From: Ramsey, Kevin
Sent: Thursday, July 17, 2014 8:57 AM
To: Johnson, Robert; Bailey, Marissa; Blamey, Alan; Moore, Scott; Haney, Catherine; Stancil, Charles; Rivera, Carmen; Hartland, David; Mendez-Gonzalez, Sandra; Brock, Terry
Subject: NFS in the News

At the next public meeting, we can expect to hear about NAS not visiting the site and not interviewing residents. NAS Cancer-Risk Study In Early Stages. The Greeneville (TN) Sun<http://www.greenevillesun.com/news/local_news/article_7cf05670-2077-550f-aa1b-2e264802cc48.html> (7/17, Little, 43K) reports that a National Academy of Sciences cancer-risk pilot study "is in its early stages and only beginning to collect the necessary data" for a draft report, NAS spokeswoman Lauren Rugani said this

week.â€ The Sun notes that the study, entitled "Analysis of Cancer Risks in Populations near Nuclear Facilities," is being sponsored and receiving funding from the NRC, with the funding being "used to perform the second phase of a pilot study of cancer risks in populations near seven NRC-licensed nuclear facilities." The Nuclear Fuel Services complex in Erwin, Tenn., the Millstone Power Station in Connecticut, and the San Onofre Nuclear Generating Station in California are among those included in the study.

From: Sheron, Brian
Sent: 10 Feb 2014 13:10:59 -0500
To: West, Steven
Cc: Gibson, Kathy;Richards, Stuart;Tadesse, Rebecca;Brock, Terry
Subject: FW: National Academy of Sciences' Pilot Planning Study of Cancer Risks in Populations Near Seven Nuclear Facilities: Addition of member to provisional committee

Here are some of the weird e-mails that have been showing up in my in-box.

From: Interested parties list for activities pertaining to the Cancer Risk project [mailto:CANCERRISKSTUDY@LSW.NAS.EDU] **On Behalf Of** Yahoo7mail
Sent: Monday, February 10, 2014 10:22 AM
To: CANCERRISKSTUDY@LSW.NAS.EDU
Subject: Re: National Academy of Sciences' Pilot Planning Study of Cancer Risks in Populations Near Seven Nuclear Facilities: Addition of member to provisional committee

Thank You Joe!

And this study doesn't take into consideration the "cocktail of chemicals" we humans are bombarded with on a daily basis from ingredients used to make RUBBER used as conditioner in our bread to diesel exhaust and toxins in our air, to the chemicals in our water. Yes, a very low dose of radiation may not 'hurt' us but if a human body is pummeled day in and day out with other environmental 'factors' that may not cause harm individually but MIXED together are toxic and cancerous!

While I know it is impossible to do a study on all the environmental factors humans may be exposed to on a daily basis, A whole NEW methodology needs to in place before any of type of study can be taken seriously. Even if the study is coming from the "FOX WATCHING THE HENHOUSE"

~Cheers, Christy

From: Bonniemike (b)(6)
To: CANCERRISKSTUDY@LSW.NAS.EDU
Sent: Friday, February 7, 2014 4:27 PM
Subject: Re: National Academy of Sciences' Pilot Planning Study of Cancer Risks in Populations Near Seven Nuclear Facilities: Addition of member to provisional committee

I think the NAS is not a co-conspirator , merely a willing partner which will take the money if someone has to take the money.

Look at the conclusions of the initial scoping study. NAS said that such a study has nearly overwhelming obstacles. But, if the NRC as directed by Congress has to spend the money , why shouldn't NAS get a piece of the action?

On Feb 7, 2014, at 4:04 PM, "Jacobus, John (NIH/OD/ORS) [E]" <jacobusj@ORS.OD.NIH.GOV> wrote:

So, is the NAS also in on the conspiracy since they are conducting the study?

-- John

John Jacobus, MS
Certified Health Physicist
National Insitutes of Health
Division of Radiation Safety
21 Wilson Drive, MSC 6780
Bethesda, MD 20892-6780

From: (b)(6)

Sent: Friday, February 07, 2014 3:48 PM

To: CANCERRISKSTUDY@LSW.NAS.EDU

Subject: Re: National Academy of Sciences' Pilot Planning Study of Cancer Risks in Populations Near Seven Nuclear Facilities: Addition of member to provisional committee

While I appreciate the purpose of the study, The Nuclear Regulatory Commission is nothing more than a 'captured' government agency. The relationship between the NRC, and the lobbyists who lobby Congress AGAINST regulation is nothing more than a revolving door. The people who work for the government in the industry learn the ins and outs' and the 'who's who' so that they when they leave the government and become lobbyists they can bypass or navigate around any opposition which adds to the disfunction of the agency. Any study results will surely be whitewashed. Also, the NRC is notorious for 'lowering' standards for Nuclear plants who are not in compliance. These plants were only supposed to have a 30 year life span but many are passed their life expectancy with standards that would have NO WAY been allowed 30 years ago. ~Christy Anderson

From: Brian Hanley (b)(6)

To: CANCERRISKSTUDY@LSW.NAS.EDU

Sent: Friday, February 7, 2014 1:06 PM

Subject: Re: National Academy of Sciences' Pilot Planning Study of Cancer Risks in Populations Near Seven Nuclear Facilities: Addition of member to provisional committee

We know the answers already. The issue is not number of studies. The issue is inability to speak up about the results science already has in hand.

On 2/7/2014 9:34 AM, Greenleaf, Toni wrote:

Interested parties:

We would like to inform you of the addition of Christie Ehemann, Centers for Disease Control and Prevention, on the Committee on Analysis of Cancer Risks in Populations near Nuclear Facilities: Phase 2 Pilot Planning. Dr. Ehemann will bring additional expertise to the committee in the collection, research, and analysis of data from cancer registries.

The slate of provisional committee appointments is open to public comment for 20 calendar days. Members of the public can provide comments here:

<http://www8.nationalacademies.org/cp/CommitteeView.aspx?key=49579>

Study Background

NAS will perform the pilot study of cancer risks in populations near seven U.S. Nuclear Regulatory Commission (U.S.NRC)-licensed nuclear facilities using two epidemiologic study designs: (i) an ecologic study of multiple cancer types of populations of all ages and (ii) a record-linkage-based case-control study of cancers in children. The pilot study will have two steps: Pilot Planning and Pilot Execution. NAS has started the Pilot Planning step which is estimated to take one year to complete.

The seven nuclear facilities that are part of the pilot study are:

Dresden Nuclear Power
Station, Morris, Illinois
Millstone Power Station,
Waterford, Connecticut

Oyster Creek Nuclear Generating Station,
Forked River, New Jersey Haddam Neck,
Haddam Neck, Connecticut
Big Rock Point Nuclear Power Plant, Charlevoix, Michigan
San Onofre Nuclear Generating Station, San Clemente,
California

Nuclear Fuel Services, Erwin, Tennessee

The study is sponsored by the U.S. Nuclear Regulatory Commission. It is a continuation of a previous study that was completed in May 2012. The report from that first study can be found here:

http://www.nap.edu/catalog.php?record_id=13388

The National Academy of Sciences, National Academy of Engineering, Institute of Medicine, and National Research Council make up the National Academies. They are independent, nonprofit institutions that provide science, technology, and health policy advice under an 1863 congressional charter.

Panel members, who serve pro bono as volunteers, are chosen by the Academies for each study based on their expertise and experience and must satisfy the Academies' conflict-of-interest standards. The resulting consensus reports undergo external peer review before completion. For more information, visit <http://national-academies.org/studycommitteprocess.pdf>

Please direct comments and questions to the project email: crs@nas.edu. If you would like to be removed from the list please send us an email with the title REMOVE FROM LIST.

If you are member of the press and have questions regarding this message, please contact Lauren Rugani at 202 334 3593 or LRugani@nas.edu.

Please do NOT respond to this email.

Ourania (Rania) Kosti, Ph.D.

Senior Program Officer

Nuclear and Radiation Studies Board

The National Academies

From: Jones, Andrea
Sent: 15 May 2012 10:33:07 -0400
To: Brock, Terry
Subject: FW: REMINDER RE: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

Terry, OIP concurs.

From: Brock, Terry
To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott
Sent: Tue May 08 11:28:45 2012
Subject: REMINDER RE: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

Hi All, this is a friendly reminder that all comments on the NAS Phase 1 cancer study are due one week from today on Tuesday, May 15.

Thanks for your review and let me know if you have any questions.

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Brock, Terry
Sent: Wednesday, April 25, 2012 3:04 PM
To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott
Subject: REQUEST: NEW DUE DATE review and comment on the NAS Phase 1 Cancer Risk Study

All,

RES sent out the official memo requesting comments on the NAS Phase 1 cancer study report to your respective offices with a new due date of Tuesday, May 15.

Thanks for your continued support,

Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Brock, Terry

Sent: Thursday, April 12, 2012 12:07 PM

To: Brock, Terry; Cassidy, John; Burnell, Scott; Chapman, Gregory; Dacus, Eugene; Dehmel, Jean-Claude; Garry, Steven; Jones, Andrea; McIntyre, David; Milligan, Patricia; Mizuno, Beth; Nimitz, Ronald; Stearns, Don; VonTill, Bill; Weil, Jenny; Woodruff, Gena; Rakovan, Lance; Diaz, Marilyn; Bush-Goddard, Stephanie; Humberstone, Matthew; Conatser, Richard; Tomon, John; Salomon, Stephen; Burnell, Scott

Subject: REQUEST: review and comment on the NAS Phase 1 Cancer Risk Study

All,

This is a heads-up that RES will be sending out a formal memo request for review and comment on the NAS Phase 1 Cancer Risk Study in the next couple of days. You all have been identified as the POC for your organizations in the memo. We're asking for comments back by Monday, May 7, 2012. Once I get the comments I'll put a meeting together to talk about next steps.

The NAS report, "Analysis of Cancer Risks in Populations near Nuclear Facilities: Phase I" is available in ADAMS at ML120860057 .

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop CSB-3A07
phone: 301-251-7487

From: Sheron, Brian
Sent: 20 Aug 2015 14:51:53 -0400
To: West, Steven;Case, Michael;Coffin, Stephanie;Tadesse, Rebecca;Brock, Terry
Subject: Fw: RESPONSE - Proposed Alternative Conclusion to Cancer paper

FYI.

From: Weber, Michael
Sent: Wednesday, August 19, 2015 6:25 PM
To: Sheron, Brian
Subject: RESPONSE - Proposed Alternative Conclusion to Cancer paper
Thanks, Brian. A few suggestions, including where/how to insert the timeframe info on the Million Worker Study.

From: Sheron, Brian
Sent: Wednesday, August 19, 2015 6:02 PM
To: Weber, Michael
Subject: FW: Proposed Alternative Conclusion to Cancer paper
Here is what I read to you.

From: Sheron, Brian
Sent: Wednesday, August 19, 2015 5:39 PM
To: West, Steven <Steven.West@nrc.gov>
Cc: Brock, Kathryn <Kathryn.Brock@nrc.gov>
Subject: Proposed Alternative Conclusion to Cancer paper

New Conclusion:

After considering the approaches described above, the staff has decided not to move forward at this time with the update of the 1990 NCI study. The staff believes the NAS proposal is not timely and the costs are excessive. While the NCRP proposal is more modest in scope but could be done faster and for significantly less cost than the NAS study, it continues to have the same limitations as the 1990 study (county-based and primarily examining only mortality rates). The staff expects believes that the Million Worker Study will provide more meaningful insights into the effects of radiation exposure on cancer risks. Assuming that the million worker study is taken to completion, which we expect by 2017 (?), the staff we intends to evaluate the results regarding any relationship between radiation exposure and cancer risk. Based on the results of that evaluation, the staff can decide if an update to the 1990 NCI study is necessary, including consideration of the agency workload, priority, and resources at that time.

The one potential problem is that Terry tells me that DOE is cutting way back on the million worker study. I was hoping that the Chairman could bring this up when he meets with Asst. Secretary Kotek, but Terry says that this was funded under the DOE Office of Science, which I understand is not under Kotek.

I have a lot of leave I will have to use or lose, so Shirley has been looking for days on my calendar she can keep open so I can take AL a day or two at a time. Tomorrow and Friday I plan to be on AL. However, I'll be home if you would like to discuss. Home phone is 301-349-5754. Steve is acting tomorrow and Rich Correia on Friday. Terry is in tomorrow so you can also call him. Let me know what you think. If you agree, we'll start to work it with the customer offices, and also find out if we need someone to make a call to the DOE Office of Science to push them to continue funding the million worker study.

From: Ramsey, Kevin
Sent: 29 Jun 2015 14:21:27 -0400
To: Brock, Terry
Cc: McIntyre, David
Subject: FW: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Our ticket system says Cathy concurred on 6/25. Unfortunately, I don't have a copy of the e-mail. Dave McIntyre is acting as Cathy's TA. He may be able to help you track down a copy of the message if you need it.

From: Brock, Terry
Sent: Monday, June 29, 2015 2:12 PM
To: Ramsey, Kevin
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Hi Kevin,
Did Cathy get a chance to concur?
Terry

From: Ramsey, Kevin
Sent: Thursday, June 25, 2015 1:42 PM
To: Brock, Terry
Subject: FW: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

FYI.

From: Roman, Cinthya
Sent: Thursday, June 25, 2015 1:41 PM
To: Ramsey, Kevin
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Robert Sun is going to ask Cathy in a few minutes.

From: Ramsey, Kevin
Sent: Thursday, June 25, 2015 1:40 PM
To: Roman, Cinthya
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Did Cathy Haney re-concur on the revised paper? RES is asking about it.

From: Roman, Cinthya
Sent: Tuesday, June 23, 2015 12:42 PM
To: Brock, Terry
Cc: Ramsey, Kevin
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

The ML number of the document didn't change, that's why we were confused.

From: Brock, Terry
Sent: Tuesday, June 23, 2015 12:41 PM
To: Roman, Cinthya
Cc: Ramsey, Kevin
Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Hi Cinthya,

The direction of the project changed mid-concurrence, so we need a new concurrence. Basically, the conclusion changed telling the Commission we do not plan on moving forward with the study. Kevin Ramsey is my NMSS POC.

Thanks,
Terry

Terry Brock, Ph.D.
Office of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission
Washington D.C. 20555
Mail Stop TWFN-10
phone: 301-415-1793

From: Roman, Cinthya

Sent: Tuesday, June 23, 2015 11:15 AM

To: Brock, Terry

Subject: FW: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

Hi Terry,

I have a question for you. I received the request below on June 19, but the package originally came on June 3. Cathy Haney already concurred on that package (hardcopy). Mike Case picked up a hardcopy package from NSIR on Friday with Cathy's original concurrence on it and NRR's original concurrence from when the package came originally on 6/3/15.

Please let me know if you are requesting NMSS concurrence, or the original concurrence will suffice.

Thanks,
Cinthya

From: Gaskins, Kimberly

Sent: Friday, June 19, 2015 2:02 PM

To: RidsOpaMail Resource; RidsRgn1MailCenter Resource; RidsNmssOd Resource; RidsNroMailCenter Resource; RidsNrrMailCenter Resource; RidsNsirMailCenter Resource; RidsOgcMailCenter Resource

Cc: Brock, Terry; Coffin, Stephanie; Case, Michael; Tadesse, Rebecca; Ford, Jennifer; Ramsey, Kevin; Milligan, Patricia; Hinson, Charles; Garry, Steven; Mizuno, Beth; Burnell, Scott; Nimitz, Ronald

Subject: RE: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

All,

Please concur no later than COB June 25th. Please contact Terry Brock at Terry.brock@nrc.gov with any questions or comments concerning this document.

Thank you
Kim

From: Gaskins, Kimberly

Sent: Friday, June 19, 2015 1:57 PM

To: RidsOpaMail Resource; RidsRgn1MailCenter Resource; RidsNmssOd Resource; RidsNroMailCenter Resource; RidsNrrMailCenter Resource; RidsNsirMailCenter Resource; RidsOgcMailCenter Resource

Cc: Brock, Terry; Coffin, Stephanie; Case, Michael; Tadesse, Rebecca; Ford, Jennifer; Ramsey, Kevin; Milligan, Patricia; Hinson, Charles; Garry, Steven; Mizuno, Beth; Burnell, Scott; Nimitz, Ronald

Subject: Review & Concurrence of Info SECY Paper-Results of the Analysis of Cancer Risk Populations

MEMORANDUM TO: Those on the Attached List

FROM: M. Case

SUBJECT: SECY-RESULTS OF THE ANALYSIS OF CANCER RISKS

IN POPULATION NEAR NUCLEAR FACILITIES:

PHASE 2 PILOT PLANNING PROJECT AND NEXT STEPS

[View ADAMS P8 Properties ML15141A343](#)

[Open ADAMS P8 Package \(SECY - Results of the Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 2 Pilot Planning Project and Next Steps\)](#)

From: Ramsey, Kevin
Sent: 11 Aug 2015 09:03:26 -0400
To: Brock, Terry
Subject: FW: SECY paper for Cancer Study
Attachments: cancer study SECY.docx
Importance: High

So, will the update expand the NCI study to include fuel facilities?

From: Bailey, Marissa
Sent: Tuesday, August 11, 2015 8:59 AM
To: Johnson, Robert; Ramsey, Kevin; Moore, Scott; Haney, Catherine
Subject: FW: SECY paper for Cancer Study
Importance: High

FYI

From: Case, Michael
Sent: Tuesday, August 11, 2015 8:40 AM
To: Champion, Tanya <Tanya.Champion@nrc.gov>; Bailey, Marissa <Marissa.Bailey@nrc.gov>; Lewis, Robert <Robert.Lewis@nrc.gov>; Lorson, Raymond <Raymond.Lorson@nrc.gov>; Lee, Samson <Samson.Lee@nrc.gov>; Burnell, Scott <Scott.Burnell@nrc.gov>; Flanders, Scott <Scott.Flanders@nrc.gov>
Cc: Erlanger, Craig <Craig.Erlanger@nrc.gov>; Andersen, James <James.Andersen@nrc.gov>; Giitter, Joseph <Joseph.Giitter@nrc.gov>; Kock, Andrea <Andrea.Kock@nrc.gov>
Subject: FW: SECY paper for Cancer Study
Importance: High

Hello folks. The purpose of this email is to get you up-to-date with the latest version of the Cancer Study paper. It has been the subject of much negotiation among Brian, the 17th, and the 18th floors. Brian has even been to every Commission office to tell them about this version of the paper.

Most of the paper is the same (as far as telling the story). What is different is the Conclusion and Resource section. The punch line of the conclusion section is that we (the NRC) are going to proceed with small scale version of the Cancer Study which involves a "simple" update of the 1990 NCI Study. The punch line of the resource section is that it probably won't start until FY 17 for budgetary reasons (and may not proceed at all if the budget is unattainable).

We think the paper is still covered by one of your earlier concurrences, but we welcome your input if you feel that is not true (It actually will be signed by Mark S. now, so it still has some processing to go.

Thanks again for all your support and wisdom.

Mike

From: Coffin, Stephanie
Sent: Tuesday, August 11, 2015 8:09 AM
To: Tadesse, Rebecca; Case, Michael
Subject: FW: SECY paper for Cancer Study
Importance: High

Per our discussion this morning " you two have actions. ☺

From: Coffin, Stephanie
Sent: Thursday, August 06, 2015 11:25 AM
To: Pope, Tia <Tia.Pope@nrc.gov>; Tadesse, Rebecca <Rebecca.Tadesse@nrc.gov>; Case, Michael

<Michael.Case@nrc.gov>

Cc: Brock, Terry <Terry.Brock@nrc.gov>

Subject: SECY paper for Cancer Study

Importance: High

Tia,

Please update the ADAMS version of the SECY paper with the attached which reflects changes to address Brian Sheron's and Steve West's comments. Please note that I still have a couple of comments in the attached to highlight for you some final editorial changes. When all done, you can route the formal package back through the RES mailroom. And thank you for your attention - the paper looks very polished and professional.

Rebecca,

Please take a look at the attached and scream if I got something wrong. I did not have the benefit of your wisdom when making these changes. And can you let the WG members know that Mike will be resending to his division counterparts tomorrow, as a courtesy? We believe their concurrence still holds but don't want them surprised.

Mike,

Per our discussion, please send this to our colleagues across the agency to give them the courtesy alert that the paper looks quite a bit different.

The right folks would be: Tanya Champion (CFO), Marissa Bailey/Craig Erlanger (NMSS), Rob Lewis/Jim Anderson (NSIR), Ray Lorson (RI), Joe Giitter/Sam Lee (NRR), Scott Burnell (OPA), Scott Flanders/Andrea Kock (NRO). OGC saw a pretty late version so I think we're okay with them.

Thanks all,

Stephanie

Comment [CS]: Tia – Please change to Mark Satorius, EDO

Comment [CS]: Tia – please change title in ADAMS to match this subject line

FOR: The Commissioners

FROM: Brian W. Sheron, Director
Office of Nuclear Regulatory Research

SUBJECT: NEXT STEPS FOR THE ANALYSIS OF CANCER RISKS IN
POPULATIONS NEAR NUCLEAR FACILITIES STUDY

PURPOSE:

The purpose of this paper is to update the Commission on the analysis of cancer risks in populations near nuclear facilities study and staff plans for the next steps.

BACKGROUND:

Each commercial nuclear power plant and fuel cycle facility that the NRC regulates is authorized to release radioactive materials to the environment as specified in the regulations and licensing documents, in compliance with dose limits for members of the public and concentration limits for liquid and gaseous effluent releases and to ensure offsite doses are as low as reasonably achievable (ALARA). The staff has concluded that offsite doses to individual members of the public as a result of these routine releases are ALARA and a small fraction of the dose limits specified in Title 10 of the *Code of Federal Regulations* (10 CFR) Part 20, "Standards for Protection Against Radiation," specifically 10 CFR 20.1301(a) and (e). The offsite dose to the highest exposed member of the public is also generally less than 1 percent of the amount of radiation the average U.S. citizen receives in a year from all background and medical sources. Nonetheless, some stakeholders have continued to express concerns about the potential effect of these releases on the health of residents living near nuclear facilities.

CONTACT: Terry Brock, RES/DSA
301-415-1793

These concerns are not new or unique to the United States. Since 2008, Canada, France, Germany, Great Britain, Spain, and Switzerland have all conducted epidemiological studies near nuclear facilities within their borders to address public health concerns. These studies have generally found no association between facility operations and increased cancer risks to the public that are attributable to the releases. For example, the German study did find an association of increased childhood leukemia risk within 5 kilometers of the facilities; however, upon examination of the offsite exposures, the authors concluded the increased risk could not be explained by the releases from the facilities¹.

The regional and headquarter staff routinely interact with stakeholders about their concerns of elevated cancer risk from facility operations. Although the offsite doses to the public from routine facility operations are very low, communicating this very low risk can often be a challenge. To help address these concerns, the staff has been using the 1990 National Cancer Institute (NCI) study, "Cancer in Populations Living near Nuclear Facilities" (Agencywide Documents Access and Management System (ADAMS) Accession No. ML15035A630), and other more recent epidemiological reports conducted by various State health departments when communicating with the public on cancer mortality in populations near nuclear power facilities. The staff relies on credible health studies to augment its discussions about the NRC's robust regulatory programs to keep offsite doses ALARA by providing public health information that directly applies to the health outcomes that are often of concern (i.e., cancer). However, the 1990 NCI report is now more than 25 years old and focused primarily on cancer mortality, with limited cancer incidence (i.e., occurrence of the disease) in two states. As a result, there was broad agency support for an update to this report, including a study of incidence if feasible, that would allow the staff to evaluate and communicate more contemporary cancer information for populations living near NRC-licensed nuclear facilities. In July 2007, the Office of Nuclear Regulatory Research received a formal request from the Office of Nuclear Security and Incident Response (NSIR), the Office of Nuclear Reactor Regulation (NRR), the Office of New Reactors (NRO), and the Office of Public Affairs (OPA) requesting an update the NCI study.

The staff originally requested NCI to provide the update. However they were unable to provide staff to support the study and they indicated these types of studies were no longer in their research focus. NCI still supports the original report and has a fact sheet on the study that is publicly available on their web site at: <http://dceg.cancer.gov/about/organization/programs-ebp/reb/fact-sheet-mortality-risk>. In addition, the study was published in the Journal of the American Medical Association in 1991².

The staff then considered contracting with Oak Ridge Associated University to perform the study, but further deliberations indicated that the National Academy of Sciences (NAS) would be a better choice due to perceived independence. Therefore, in April 2010, the NRC requested NAS perform a study on cancer risks in populations living near NRC-licensed facilities to update the 1990 NCI study. NRC and NAS decided to divide the study into phases. In Phase 1, NAS explored the feasibility of conducting an updated study by using more modern methods to perform the analysis. This was documented in the 2012 report, "Analysis of Cancer Risks in Populations Near Nuclear Facilities: Phase 1" (ADAMS Accession No. ML15035A132). The staff communicated the results of the Phase 1 study and the NAS recommendations for the

¹ Kaatsch P, et al. "Leukaemia in Young Children Living in the Vicinity of German Nuclear Power Plants," *International Journal of Cancer*, 2008 Feb 15; 122(4):721-6.

² Jablon S, Hrubec Z, and Boice JD. "Cancer in Populations Living Near Nuclear Facilities: A Survey of Mortality and Incidence in Two States," *The Journal of the American Medical Association*, 1991 Mar 20; 265(11):1403-1408.

second phase pilot studies in SECY-12-0136, "Next Steps for the Analysis of Cancer Risks in Populations near Nuclear Facilities Study" (ADAMS Accession No. ML12249A121). In Phase 2, NAS would conduct pilot studies to determine the ability to practically apply the Phase 1 methods at seven sites recommended by the NAS committee: Dresden (in Illinois), Millstone (in Connecticut), Oyster Creek (in New Jersey), Haddam Neck (decommissioned; in Connecticut), Big Rock Point (decommissioned; in Michigan), San Onofre (in California), and Nuclear Fuel Services (in Tennessee). NAS selected these sites because they provide a good sampling of facilities in six States with different operating histories, population sizes, and levels of complexity in data retrieval from the State cancer registries. NAS specifically recommended the pilot study examine two study designs: a population study of cancer diagnosis and mortality rates for multiple cancer types and all age groups, down to the census-tract level, and a case control study of childhood cancers in children born within a fixed distance of a nuclear facility³. Upon completion of the proposed Phase 2 pilot studies, NAS was to determine whether further study is practical on a nationwide scale, and the NRC would then determine whether to perform the studies at all NRC-licensed facilities (i.e., balance of operating nuclear power plants and fuel-cycle facilities).

NAS split the Phase 2 pilot study into a pilot planning project and a pilot execution project. In the pilot planning project NAS explored the availability of facility effluent records and access to the pilot study site cancer registries in the respective states. In addition, NAS solicited cost estimates from contractors to determine the actual costs of performing the pilot study. In the following section, we describe the staff's evaluation of the NAS pilot planning project report, "Analysis of Cancer Risks Near Nuclear Facilities: Phase 2 Pilot Planning" (ADAMS Accession No.: ML15035A135) and staff plans for the next steps.

DISCUSSION:

Summary and Staff Evaluation of the NAS Phase 2 Pilot Planning Project

NAS stated in the pilot planning report that the pilot studies are meant to determine the practicality of implementing the methods and study designs recommended in Phase 1. It emphasized that any data collected during the pilot study would have limited use for estimating cancer risks in populations near each of the nuclear facilities or for the seven nuclear facilities combined because of the imprecision inherent in estimates from small samples. NAS also cautioned that any decision to proceed with a full scope study should be based solely on conclusions related to practicality and not on risk estimates. NAS communicated to the staff that the execution phase of the pilot study would require significant time and resources to complete: 39 months and \$8 million.

The staff estimates that it may take NAS 8 to 10 years from now to complete the pilot and the subsequent nation-wide studies before NRC has final cancer risk results to share with NRC stakeholders—the original intent of the project. That would possibly prolong the study to 2025, 15 years after the start of the project with NAS.

³ The population-based study design uses a geographical area as the unit of observation (e.g., census tract as proposed by NAS, county as used in the 1990 NCI report, ZIP Code) and uses an aggregate analysis that looks at a study factor (exposure) and an outcome factor (disease or death) measured in the geographical area at the same time. This study can show possible associations between exposure and disease. The case-control study design compares the prevalence of risk factors or exposures in a series of diseased study subjects (cases) with the prevalence of risk factors or exposures in a series of disease-free study subjects (controls).

Summary and Staff Evaluation of Alternate Approaches

Given the NAS position regarding the limited usefulness of the pilot study results to draw conclusions about the pilot plants (or just as importantly, single facilities), the long duration and high cost of the pilot study, and the long duration of subsequent studies, the staff concluded that a more timely and less costly alternative to the NAS proposal should be considered. To accomplish this, the staff communicated its concerns to NAS about the usefulness of the pilot study results in communicating cancer risks to stakeholders and the overall study duration and costs. The staff requested that NAS focus on providing final results for the next phase of the study to shorten the study time. Specifically, staff asked NAS to focus on the Phase 1 recommended case-control study design and perform an analysis of a sample of facilities in the United States to draw statistically valid and generalizable results to the entire fleet. In response, NAS proposed that the pilot planning committee reconvene to examine our request for the alternate approach at an additional \$200,000 cost for a 9-month study. After the new review, NAS estimated another 50 months to complete the alternate approach at an uncertain cost.

While the staff was considering NAS' response, the President of the U.S. National Council on Radiation Protection and Measurements (NCRP) approached the staff about conducting an update to the 1990 NCI study. NCRP is an organization chartered by the U.S. Congress in 1964. The Charter of the Council (Public Law 88-376) states its objectives to include: collect, analyze, develop and disseminate in the public interest information and recommendations about (a) protection against radiation and (b) radiation measurements, quantities and units, particularly those concerned with radiation protection. The current President of NCRP was one of the original authors of the 1990 NCI study, and he has been following the staff activities with NAS with interest.

NCRP indicated that it could update the 1990 NCI study report in 2 to 3 years and for approximately \$2.5 million. An update to the NCI study would be a more modest initiative. Instead of the NAS recommended two study designs, an NCI update would use the same methods used in the 1990 study—a countywide population-based study design, no dosimetry considerations, and limited cancer incidence information.

CONCLUSION:

After considering the approaches described above, the staff intends to proceed with updating the 1990 NCI study. Such an approach would be able to provide final results in a reasonable time period to meet the original staff goal of having updated information. The staff acknowledges that this update will be more modest than what NRC asked NAS to consider in a new update, but we have affirmed with our colleagues in NSIR, NRR, NRO, and OPA that a direct update would be both adequate and desirable for staff to discuss cancer risks with the public. The more modest scope is also consistent with the direction of the Commission in its response to the Project Aim 2020 Report, particularly with maintaining a "balanced perspective of the significance of the activity." The staff would ensure that such an update would include new results for NRC facilities not operational or considered at the time of the 1990 study (e.g., Nuclear Fuel Services in Tennessee, Braidwood and Byron Nuclear Generating Stations in Illinois). The staff plans to engage the Office of Administration to ensure all procurement processes are followed to determine if NCRP or another entity would be the best to complete the NCI update.

RESOURCES:

For 2016, the Commission redirected contracting funds for the Cancer Study to higher priority work. Therefore, the staff plans for 2016 will focus on obtaining formal and definitive cost estimates for updating the NCI study as described above and establishing the appropriate contracting vehicles. The staff planned for nominal funding (approximately \$300K) to start the Cancer Study in the operating reactor business line of the Chairman's Fiscal Year 2017 Budget Proposal. Any appropriation changes in the 2017 Budget which result in a reduction to the RES Allowance will require reevaluation of the priorities and possible termination of this study. If the Cancer Study proceeds in 2017, funds to complete the study will be planned for the remaining years through the Planning, Budget, and Performance Management process.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resources implications and has no objections.

(
Brian W. Sheron, Director
Office of Nuclear Regulatory Research)

Comment [CS]: Tia – Please change to EDO, Mark S.

engage NAS to perform the case-control study design for follow-up research if deemed necessary after the update is complete.

The staff estimates that an update to the NCI study will take 2-3 years to complete and will cost approximately \$2.5 million dollars. For 2016, the Commission redirected contracting funds for the study to higher priority work. Therefore, the staff plans for 2016 will focus on formal estimates for the NCRP project and establishing the appropriate contracting vehicles. The staff planned for nominal funding to start the study in the operating reactor business line of the fiscal year 2017 budget. Funds to complete the study will be planned for the remaining years of the project through the Planning, Budget, and Performance Management process.

COORDINATION:

The Office of the General Counsel has reviewed this paper and has no legal objection. The Office of the Chief Financial Officer has reviewed this paper for resources implications and has no objections.

Brian W. Sheron, Director
Office of Nuclear Regulatory Research

Comment [CS]: Tia, change to match previous page

Comment [CS]: Tia, please add CFO on the concurrence block, before BWS. Also add EDO to the concurrence block. I added the CFO concurrence email to the package.

ADAMS Accession No.: ML15141A404

OFFICE	RES/DSA/RPB	Tech Editing	BC:RES/DSA/RPB	D:RES/DSA	R-I
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DATE	06/23/15	/ /	/ /	/ /	

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