Rulemaking1CEm Resource

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Re: Docket ID No. NRC-2012-0246

Fax Cover Sheet

From: Kevin Kamps

To: NRC Nuclear Waste Confidence Directorate & Secretary, US NRC

Date: 12/20/13

Re: NUREG-2157, WC DGEIS

# of pages:

Notes: Cover sheet (1) + cover letter (1) + pamphlet (2, legal-sized) + event announcement (3) + event schedule (1) + speakers roster (4) + fact sheet (4) = 16 pages, total

A Mountain of Radioactive Waste — It's Time to Stop Making It!

Public Comment Re: Docket ID No. NRC-2012-0246, WC DGEIS, NUREG-2157

Dec. 20, 2013

Dear NRC Nuclear Waste Confidence Directorate,

On Dec. 2, 2012, a major event was held at the University of Chicago, sponsored by Beyond Nuclear, Friends of the Earth, and Nuclear Energy Information Service,. It marked the 70th year, to the day (Dec. 2, 1942), since Enrico Fermi created the first self-sustaining nuclear chain reaction, in the world's first prototype atomic reactor ,under the bleachers of the U. of Chicago football stadium. It came during the Manhattan Project race for the atomic bomb, eventually dropped on Hiroshima and Nagasaki, Japan. Thus was generated the world's first reactor-generated high-level radioactive waste.

The mountain of commercial radioactive waste would begin to be generated some 15 years later, in 1957 at Shippingport, PA, site of the country's first "civilian" atomic reactor. But the same lessons apply...

The take home lesson, in a nutshell, from the conference? As reflected in the logo for the conference, and the pamphlet created for the occasion: **The lethal legacy of the Atomic Age is a "Mountain of Radioactive Waste 70 Years High," and we don't even know what to do with the first cupful. It's time to stop making it.**

Given the costs, risks, and liabilities of irradiated nuclear fuel – as well as the ready alternatives to nuclear power of energy efficiency, energy conservation, and renewable sources such as wind power and solar power – NRC's current moratorium on approving new reactor combined construction and operating licenses and old reactor license extensions should be made permanent.

A carbon-free, nuclear-free energy future is indeed doable. In fact, it is the only sane way out of the climate crisis.

Also attached are the announcement of the 2012 Chicago event, its schedule, its roster of speakers, and a 4-page fact sheet I wrote, entitled "Red Gate Woods: History's First Radioactive Dust Bin," about how we have not even figured out what to do with Fermi's first cupful of radioactive waste from 70 years ago. The same is true for commercial radioactive waste.

Thank you.

Sincerely, Kevin Kamps

Kevin Kamps, Radioactive Waste Watchdog, Beyond Nuclear,6930 Carroll Ave., Ste. 400, Takoma Park, MD 20912

Reprocessing

► At reprocessing plants, the irradiated rods are chopped up and are then dissolved in acid to extract plutonium and uranium. Separated plutonium can be used to make nuclear weapons. The global-warming gas, carbon dioxide, that is released from reprocessing plants, contains radioactive carbon-14, an extremely radiotoxic isotope with a half-life of 5,700 years. You have to multiply the half-life by at least 10 to estimate an isotope's hazardous persistence.

► Reprocessing of commercial fuel has not occurred in the US since 1972, and may never occur again, because of concerns about potential nuclear weapons proliferation, the exorbitant expense, large-scale environmental releases, and safety risks. For more information, see the BEYOND NUCLEAR pamphlet: *Nuclear Fuel Reprocessing = Weapons Proliferation.*

It Doesn't Take An Accident

Nuclear power plants cannot operate without regular, deliberate releases of radioactive liquids, gases and particles into the environment during their routine, everyday operation. That is because no economically feasible technology exists to filter out some of these wastes. The federal government therefore does not require these materials to be filtered. Any releases that do not exceed the government's permissible contaminant levels are allowed to be discharged into our air and water, unmonitored and unreported.

"Permissible" does not mean "safe"

"Centralized Interim" Storage

► "Centralized interim" storage, or parking-lot dumpsites for irradiated fuel rods, could easily become permanent if a national deep-geologic site is never located and built.

► "Centralized interim" dumpsites are often proposed for Native American lands, an environmental injustice.

► "Centralized interim" sites would multiply transport risks because wastes would have to be moved yet again if a reprocessing plant or a permanent repository were ever built.

Transport

► When radioactive wastes are transported, many shipments travel directly through major population centers.

► Severe accidents, including crashes, fires, and underwater submersions, could turn a waste truck, train or barge shipment into a radioactive disaster.

► Transport casks are not designed to withstand attacks on roads, rails or waterways.

► Barge shipments — on rivers, the Great Lakes, and seas — threaten drinking water supplies and fishing grounds, as well as vital ecological biodiversity, and tourism.

► In the late 1990s, it was revealed that a quarter to a third of all waste shipments to the French reprocessing facility involved containers externally contaminated at levels 500-3,300 times the permissible dose.

► Shipments of radioactive wastes can routinely expose transport workers and the public to penetrating gamma radiation comparable to one or more chest x-rays per hour.

A "Permanent" Repository

► **No permanent repository exists in the US for the irradiated rods, and may never exist.**

► The proposed Yucca Mountain repository in Nevada, on Western Shoshone land, was finally canceled by 2011. By then, the amount of stockpiled US irradiated fuel had already surpassed Yucca's capacity, and would have required a *second* deep-geologic dump. In its Yucca regulations, the EPA acknowledged that high-level waste poses a million years of hazard.

► The search for a new US dumpsite has resumed. Any of our 48 contiguous states could be targeted.

► Efforts to isolate irradiated fuel for the requisite millennia pose scientific, ethical and fiscal challenges.

Into Eternity

To view the haunting film about Onkalo, the Finnish radioactive waste repository under construction, contact BEYOND NUCLEAR. *Into Eternity* is a thought-provoking look into humankind's deadly radioactive waste legacy.

Cover logo kindly contributed by Tom Engelhardt.

BEYOND NUCLEAR
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www.BeyondNuclear.org **JAN 2012**

The lethal legacy of the Atomic Age

1942 → 2012 → infinity

It's time to stop making it.

From Fermi .... to Fukushima .... to Infinity .... the unsolved radioactive waste problem

The History

On December 2, 1942, scientists created the world's first self-sustaining nuclear chain reaction at the Fermi reactor in Chicago. The Atomic Age was born — and so was radioactive waste.

In the 1950s, when commercial nuclear power plants began to produce electricity, using uranium fuel, they also began to produce tremendous amounts of radioactive waste. Much of that waste will remain hazardous for thousands of years and beyond. Radioactive wastes are produced at every stage of the uranium fuel chain — at mines, mills, chemical conversion and enrichment plants, during fuel fabrication and reprocessing, and most dangerously at the reactor sites.

No permanent, safe location or technology has ever been found to isolate even the first cupful of radioactive waste from the biosphere. And yet we continue to generate more and more — a mountain of waste 70 years high.

Radioactive Waste Streams

► Billions of tons of radioactive waste that are produced at the reactors and at the uranium fuel production locations are either left on site, are transported to a waste dump, or are dispersed into the environment.

► At nuclear power plants, some of the fuel rods are removed from the reactor after fissioning for about five years. They are replaced with fresh rods, and the irradiated fuel rods (called high-level waste) are transferred into an indoor fuel pool. Irradiated fuel is at least a million times more radioactive than fresh fuel.

► So-called "low level" waste is produced in massive amounts and includes the radioactive, saturated air and water filters; pipes, pumps, and other components that must be replaced as they wear out or malfunction; and control rods. Much of this "low-level" waste is so highly radioactive that it must be handled by remote-control equipment.

Reactor Fuel Pools

► Although designed to hold irradiated fuel for only a few years, US reactor fuel pools still contain at least 75% of all the irradiated fuel generated since 1957, the year of the first US commercial reactor.

► Most fuel pools are so tightly packed with fuel rods that extraordinary precautions must be taken to prevent an inadvertent chain reaction.

► The Nuclear Regulatory Commission does not currently require emergency backup power to run the fuel pool cooling systems, or to supply make-up water, and operate other safety equipment.

► Several of the reactor fuel pools are already leaking, releasing radioactivity into the environment.

TIME CAPSULE

Outdoor Cask Storage

►In the mid-1980s, as the indoor fuel pools filled up, some of the nation's fuel rods were transferred to concrete and/or metal casks outdoors.

► Quality assurance violations in design and fabrication of casks leave their structural integrity in question, and have led to hydrogen explosions and fires.

►The NRC does not require outdoor casks to be directly monitored for overheating, radiological releases, and other safety issues.

► Outdoor casks are not designed to withstand attacks. Tests have shown that even the highest quality casks could be breached by an anti-tank missile.

► Outdoor casks do not provide permanent isolation of the wastes. Heat, radioactivity and weather impacts wear them down. No technology currently exists to safely remove and transfer old, deteriorated fuel rods to a new cask for continued storage.

Hardened On-Site Storage (HOSS)

► The HOSS concept calls for emptying the pools, and fortifying high quality outdoor casks with thick bunkers and berms. Safeguards would be designed that would seek to protect against leaks, accidents, and attacks.

► Although nearly 200 environmental groups have endorsed HOSS as an interim storage measure, the federal government has not yet required these modifications for outdoor cask storage.

*What if the Nuclear Industry had a birthday party...and **WE** showed up?*
NEIS, Beyond Nuclear and Friends of the Earth to conduct a 2-day Nuclear-Age Conference in Chicago

Dec 2, 2012 marks the 70th anniversary of Enrico Fermi's historic first sustained nuclear chain reaction – a transformational event in human history which changed humanity and ushered in the Nuclear Age.

To mark that historic occasion, safe-energy and anti-nuclear activists from around the world have decided to throw a party, of sorts – a Conference: A Mountain of Waste 70 Years High: Ending the Nuclear Age. What better place, the thinking went, to end the Nuclear Age than on the very spot where it all began?

It's important to recognize that that Age has not been kind to everyone – beginning with the people of Japan. The Faustian bargain continues to this day – with the Japanese again becoming nuclear victims after Fukushima, and the world threatened by the continued presence of both nuclear weapons and nuclear power radiation releases and wastes.

This Conference notes that to this day, not a single ounce of radioactive waste has been permanently disposed of in an environmentally responsible manner. And it attempts to bear witness to those fellow humans to whom the Nuclear Age has been less than kind. Whether the hibakusha of Hiroshima or now Fukushima; the Navajo or Australian Aborigines; the children of Belarus; the returning Gulf War veterans; the Marshall Islanders; or the old women of Opachychi, who have returned to their family homes in the highly contaminated regions surrounding Chornobyl to live out the remainder of their radiation-disrupted lives, it's important to understand that the Nuclear Age has come at an exceedingly high price, often paid by those who don't receive the alleged benefits.

The Conference will bring in the best minds of the movement and numerous people affected adversely by the Nuclear Age to tell that story. The Conference features such notables as Akiko Yoshida of Friends of the Earth-Tokyo, to update attendees about the ongoing, never-ending Fukushima disaster; Setsuko Thurlow, a Hiroshima hibakusha from Toronto, Canada, to make the temporal connection between this anniversary and the first atomic bombing; Dr. Norma Field, Robert S. Ingersoll Distinguished Service Professor of Japanese Studies Emerita, University of Chicago, who has spent years teaching "atomic history" at the University of Chicago; and Dr. Arjun Makhijani of the Institute for Energy and Environmental Research in Takoma Park, MD, who will provide the details of how the US – and world – can get off the nuclear treadmill and go "carbon-free/nuclear-free".

Details of the schedule and the full list of speakers can be downloaded at http://www.neis.org.

In addition to the Conference presentations, a Chicago premiere of the acclaimed documentary, "The Atomic States of America" is planned for Saturday evening, Dec. 1st, and will be free and open to the public (free-will offerings accepted). On Sunday Dec. 2, attendees will end the Conference with a memorial observance at the Henry Moore Sculpture to Atomic Energy -- which marks the very spot on the University of Chicago campus where Fermi produced his first chain reaction 70 years before to the day. On Monday Dec. 3, a special guided tour car caravan will depart from the Henry Moore Sculpture to Nuclear Power on the University of Chicago Campus to the Red Gate Woods Forest Preserve in Palos Park to visit the burial site of the first nuclear wastes of the Nuclear Age – within spitting distance of bike and hiking trails, and public picnic groves.

This is a call to come to the very birthplace of the Nuclear Age – memorialized by Henry Moore's sculpture to Nuclear Energy, on the very site where Fermi's experiment occurred – to remember its victims, and seriously question whether that Age has the right to continue among civilized human beings.

Make plans to attend with a guest, and pass this invite along to interested individuals and groups.

We ask you to be a part of this historic event in Chicago to help end the Nuclear Age – on the very spot where it began, 70 years ago.

Stay well, do great things, register TODAY.

Dave Kraft,
NEIS, Chicago

Linda Gunter
Beyond Nuclear, Takoma Park MD

Kendra Ulrich
Friends of the Earth, Washington DC

A Mountain of Waste 70 Years High: Ending the Nuclear Age

Saturday, December 1 -- International House, 1414 E. 59th Street, Chicago
8:30 a.m. to 5 p.m.
Evening events 5:30 – 10 p.m.

Sunday, December 2
9 a.m. to 3 p.m. -- Hutchinson Commons, Reynolds Club, 5706 S. University Ave., Chicago
3:30 p.m. -- ***Memorial ceremony***, at Henry Moore Sculpture to Nuclear Power, 56th and Ellis, Chicago
4:30 – 6:30 -- ***Active Hope*** – a workshop to deal with nuclear despair

Monday, December 3
A planned caravan to the Red Gate Woods Forest Preserve site where the first wastes of the Nuclear Age are buried – next to picnic groves and bike paths. Leaving from the Henry Moore Sculpture on the University of Chicago campus at 10 a.m., returning by 1 p.m. ***You must sign up in advance at Conference Registration desk for this tour.***

- ***Guest Plenary Presenters:***
  - **Akiko Yoshida**, Friends of the Earth, Tokyo Japan
  - **Setsuko Thurlow**, hibakusha, Toronto Canada
- ***Keynote Speaker: Sat. Dec. 1, 7 – 8 p.m., open to the public***
  - **Dr. Norma Field**, Univ. of Chicago Robert S. Ingersoll Distinguished Service Professor of Japanese Studies Emerita
- ***Seven panels*** featuring **16 other guest presenters** presenting on topics dealing with nuclear power, waste, weapons, and – a world without nuclear
- ***Book Signing:*** **Dr. Arjun Makhijani** *("Carbon Free/Nuclear Free: A Roadmap for U.S. Energy Policy")*, and **Kristen Iversen** *("Full Body Burden: Growing Up in the Nuclear Shadow of Rocky Flats")*

Optional Reception with Presenters – Sat. Dec.. 1, 5:30 – 7 p.m.; $30/person, advance reservations only

Chicago Premiere of the acclaimed documentary, ***"Atomic States of America"***
Sat. evening, Dec. 1, 8 – 10 p.m., ***free, open to the public***

REGISTRATION: open to the public, $40 for 2 days, includes lunch ($50 at door); online at **www.neis.org**; or download registration form from the website and returning it by mail with payment to NEIS.

FOR MORE INFORMATION: full Conference schedule, registration, speakers list, travel and housing suggestions available by visiting the website of Nuclear Energy Information Service (NEIS), **www.neis.org**; or call us at (773)342-7650.

SPONSORED BY: Beyond Nuclear, Nuclear Energy Information Service (NEIS), and Friends of the Earth; co-sponsored by UChicago Climate Action Network (U-CAN), and International House Global Voices Program (Saturday events).

DRAFT 13 -- A Mountain of Waste 70 Years High: Ending the Nuclear Age – v. 11/06/12

Time	Saturday, December 1 (International House, 1414 E. 59th Street, Univ. of Chicago)	Sunday, December 2 (Hutchinson Commons, Reynolds Club, 5706 S. University Ave.)
8:00 AM	Registration, continental breakfast	
8:30	Greetings, business - **Plenary Introduction: A Mountain of Waste 70 Years High and Growing:** Kay Drey, Beyond Nuclear	Sign in, beverages and continental breakfast
9:00	**Panel: Where are the People? – Those Impacted** **Moderator: Dr. Norma Field, Prof. Emer., Univ of Chicago** 1. Robert Chavez, Pueblo, NM 2. Kristen Iversen, Rocky Flats CO 3. Jeff Patterson, Pres., PSR 4. Charmaine Whiteface, SD 5. Setsuko Thurlow, hibakusha	**Panel A: It's the Waste, Stupid! –** **Moderator: Paul Gunter, Beyond Nuclear** 1. History and Types: Diane D'Arrigo, NIRS 2. Treatment/Storage/Disposal : Arjun Makhijani, IEER
10:30	BREAK	10:15 – 10:30 BREAK
10:45	**10:45 "The Way Forward – WITHOUT NUKES": Carbon Free/Nuclear Free** Dr. Arjun Makhijani, Inst. For Energy & Environmental Research	**10:30 Panel B: It's the Waste, Stupid!** 3. Transport : Steve Frishman, St of Nevada Nuclear Waste Task Force 4. Next Steps: Kevin Kamps, Beyond Nuclear
NOON	LUNCH IN (provided)	LUNCH IN (provided)
12:40 PM	**LUNCH PLENARY: Fukushima: the Never Ending Story** **Akiko Yoshida, Friends of the Earth, Tokyo**	**LUNCH PLENARY: A Hibakusha's View of the Nuclear Age;** **Setsuko Thurlow, presentation and discussion**
1:30	**Panel A: Nuclear Power/Nuclear Weapons: The Connections** **Moderator: Kennette Benedict, Bulletin of Atomic Scientists** 1. Historic Perspective: Paul Gunter, Beyond Nuclear 2. The Labs, the Wastes: Bob Alvarez 3. Kendra Ulrich, Friends of the Earth	**Panel: The Way Forward: Without Nuclear Weapons & Power** **Moderator: TBD** 1. Germany without nukes -- Arne Jungjohann, Heinrich Boell Fndn 2. Japan without nukes -- Akiko Yoshida, FoE Tokyo Japan 3. USA without nukes -- Arjun Makhijani, IEER
3:00	BREAK	WRAP UP SESSION
3:30	**Panel B:** 1. New Weapons/Non-Proliferation: Kennette Benedict, BAS 2. Old & New Reactors: Arnie Gundersen, Fairewinds	Commemoration at the **Henry Moore Sculpture to Nuclear Power** 56th St. and Ellis Ave. (dress for the weather!)
5:00	WRAP UP SESSION	***Active Hope: Transforming Nuclear Despair into Passionate Action,*** a workshop (based on the works of Joanna Macy – conducted by Kathleen Rude and Carolyn Treadway)
5:30	Reception event, Assembly Hall (for presenters, optional to Conference attendees; open to the public for $30 charge)	
7:00	Dr. Norma Field address, ***"Where are the People?"*** Assembly Hall	***Optional Monday Event:*** car caravan to Red Gate Woods, site of Manhattan Project waste burials and monuments; leave 10 a.m. from Moore Sculpture, RSVP req'd at registration desk during Conference; volunteer drivers needed
8:00	Premiere film showing: ***Atomic States of America,*** Assembly Hall	

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- **Nuclear Energy Information Service** (NEIS), Chicago, www.neis.org; Email: neis@neis.org; (773)342-7650
- **Beyond Nuclear**, Takoma Park MD, www.beyondnuclear.org, Email: info@beyondnuclear.org; (301)270-2209
- **Friends of the Earth**, Washington, DC, www.foe.org, 202-222-0715

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UChicago Climate Action Network (U-CAN)
a student climate-environmental organization

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A MOUNTAIN OF WASTE 70 YEARS HIGH: ENDING THE NUCLEAR AGE
PRESENTER BIOS SUMMARY SHEET

Bob Alvarez is a Senior Scholar at the Institute for Policy Studies in Washington D.C. and Senior Advisor at Friends of the Earth. He is considered one of the nation's experts on the environmental, safety and health aspects of civilian and military nuclear programs. He is an accomplished and widely published writer and has served as Senior Policy Advisor to the U.S. Secretary of Energy. While in DOE, he led U.S. teams into North Korea to secure spent reactor fuel at the Yongbyon nuclear site, was responsible for strategic nuclear material and asset management policies, and led the DOE's successful effort to establish a federal compensation program for sick nuclear weapons workers. Between 1988 and 1993, Mr. Alvarez served on the Majority Staff of the U.S. Senate Committee on Governmental Affairs. He worked on behalf of Senator Glenn to: strengthen radiation provisions of the Clean Air Act; establish independent safety oversight of the DOE nuclear weapons complex, terminate the U.S. atmospheric nuclear weapons testing readiness program, help create the DOE environmental remediation program, establish an economic transition program for workers and communities at U.S. nuclear weapons sites.

Kennette Benedict has been Executive Director of the Bulletin of the Atomic Scientists since 2005; their goal is to inform the public about the dangers of nuclear weapons, climate change, and emerging technologies in the life sciences. She also teaches at the Harris School of Public Policy at the University of Chicago, where she is also a Senior Fellow at the Energy Policy Institute. Before joining the Bulletin, Benedict was the Director of International Peace and Security at the John D. and Catherine T. MacArthur Foundation. **Contact:** www.thebulletin.org

Robert Chavez is a 19 year-old from both Ohkay Owingeh and Santa Clara Pueblos. He is the Youth Coordinator for Honor Our Pueblo Existence and Think Outside the Bomb (TOTB) and a member of Tewa Women United's Environmental Justice Group. Growing up around strong anti-nuclear mentors he began his learning and activism around nuclear issues at a very early age. For the past 12 years he has been educating peer and community members about the environmental and health risks of working at or living in close proximity to Los Alamos National Laboratory. He was a travelling speaker on the 2010 National TOTB Tour and has made many public appearances speaking about these issues. He is passionate about educating students in New Mexico so that they may make informed decisions before pursuing work at LANL.

Diane D'Arrigo is the Radioactive Waste Project Director for Nuclear Information and Resource Service (NIRS) and a member of the national Sierra Club Nuclear Issues Activist Team. She has a degree in chemistry and environmental studies and work experience in industrial and academic analytical chemistry and biological research. She has closely followed the problems with radioactive waste for decades, especially so-called "low-level" nuclear waste, working to stop a new generation of atomic power and

weapons waste, assisting communities targeted with new dumps, helping to close and prevent expansion of existing, leaking waste sites and fighting the national and international moves to deregulate nuclear waste into ordinary trash and commercial recycling. **Contact::** www.nirs.org

Kay Drey is a board member of Beyond Nuclear in Takoma Park, and of the Great Rivers Environmental Law Center in St. Louis. For nearly 40 years, Kay has researched and written about the dangers of nuclear energy and radioactive waste, and advocated for the closure of nuclear plants and uranium facilities. Kay was active in civil rights work before focusing on nuclear power.

Dr. Norma Field is Robert S. Ingersoll Distinguished Service Professor Emerita of Japanese Studies in the Department of East Asian Languages & Civilizations, University of Chicago. She is interested in the struggle for social justice and sees the nuclear issue as a major frontline. She travels to and communicates regularly with Japan. She has hosted several important conferences about the Nuclear Age, nuclear weapons and nuclear power. ***(Saturday evening Keynote Speaker)***
Contact: norma.field@gmail.com

Steve Frishman is a geologist who serves on the Board of Directors of the Nevada Nuclear Waste Task Force. Since 1987, Steve has served as a technical and policy consultant to the Nevada Agency for Nuclear Projects. Prior to this role, Steve was Director of the Texas Nuclear Waste Programs Office, when Texas' potential sites were being considered. He also served on a Texas Agency advisory committee advising the Texas Congressional Delegation on the drafting of the Nuclear Waste Policy Act of 1982.

Arnie Gundersen, chief engineer for Fairewinds Associates, is an energy advisor with 40-years of nuclear power engineering experience. A former nuclear industry senior vice president, Mr. Gundersen carned his Degrees in nuclear engineering from RPI, holds a nuclear safety patent, and was a licensed reactor operator. During the time Mr. Gundersen was employed by the nuclear power industry, he managed and coordinated projects at 70-nuclear power plants around the country. After becoming a nuclear whistleblower in 1990, he became an independent nuclear engineering and safety expert. **Contact:** www.fairewinds.org; (802)865-9933 - office

Paul Gunter has more than 35 years of experience as an anti-nuclear activist and safe energy advocate. He currently works with Beyond Nuclear in Takoma Park, MD as the Director of the Reactor Oversight Project. He was a co-founder of the New England-based Clamshell Alliance, which in 1976 opposed the construction of the Seabrook nuclear power plant in New Hampshire. He is a recognized international spokesperson on nuclear power and weapons issues. **Contact:** (301)523-0201 (c) and (301)270-2209 (o); paul@beyondnuclear.org

Kristen Iversen grew up in Arvada, Colorado near the Rocky Flats nuclear weaponry facility and received a Ph.D. in English from the University of Denver. She is the author of ***Full Body Burden: Growing Up in the Nuclear Shadow of Rocky Flats***. Her work has appeared in The New York Times, The Nation, Reader's Digest, and many other publications. She is an associate professor at the University of Memphis where she directs the MFA program in creative writing.
Contact: Kristen@kristeniversen.com

Arne Jungjohann is Program Director for Environment of the Washington office of the Heinrich Boell Foundation, a think tank of the German Green Party that promotes solutions for a renewable energy-based economy. Arne is a leading international voice on the German energy transition and coordinates the worldwide activities of the Foundation on this issue. In the UNFCCC negotiations, his work contributes to a just and fair global climate treaty.
Contact: ARNE.JUNGJOHANN@US.BOELL.ORG

Kevin Kamps has served as Radioactive Waste Specialist at Beyond Nuclear (2007-present) and NIRS (1999-2007). He serves as a board member of Don't Waste Michigan, representing the Kalamazoo Chapter, and sits on the Great Lakes United Nuclear-Free/Green Energy Task Force. He has been an anti-nuclear activist for over 20 years.
Contact: 240-462-3216; kevin@beyondnuclear.org

Dr. Arjun Makhijani is President of the Institute for Energy and Environmental Research in Takoma Park, Maryland. With a PhD specializing in nuclear fusion, Dr. Makhijani is a recognized authority on energy issues. Since 1971 he has published numerous articles, reports and books on energy and environment including ***Carbon-Free and Nuclear-Free: A Roadmap for U.S. Energy Policy*** (2007). In 1989 he received The John Bartlow Martin Award for Public Interest Magazine Journalism of the Medill School of Journalism, Northwestern University, with Robert Alvarez; was awarded the Josephine Butler Nuclear Free Future Award in 2001 and the Jane Bagley Lehman Award of the Tides Foundation in 2008; and was named a Ploughshares Hero, by the Ploughshares Fund (2006). In 2007, he was elected a Fellow of the American Physical Society. He has many published articles in journals such as The Bulletin of the Atomic Scientists and The Progressive, as well as in newspapers, including the Washington Post. Dr. Makhijani has testified before Congress, and served as a consultant to several state utilities and UN agencies.
Contact: (301)270-5500; www.ieer.org

Dr. Jeffrey Patterson is Professor Emeritus in the Department of Family Medicine at the University of Wisconsin School of Medicine and Public Health. He is a past president and president elect of the national Physicians for Social Responsibility. He has traveled to the former USSR many times and lectured widely on the effects of radiation and nuclear weapons.
Contact: (608) 206-2101; jjpatter@wisc.edu

Kathleen Rude conducts workshops on sustainability and earth-based spirituality. A lifelong environmentalist, Kathleen has been trained by Joanna Macy and is a founding member of The Work That Reconnects Facilitator Network. She is also a shamanic practitioner and ceremonial leader and an environmental writer/advocate with a Master of Science degree in natural resources.
Contact: (847)940-0908; kathleenrude@mac.com

Setsuko Thurlow offers her personal testimony as a Hiroshima survivor. At the age of 13 she became the victim of the world's first atomic bombing of Hiroshima. Educated in Japan as a social worker, Setsuko has dedicated her adult life to the total abolition of nuclear weapons, and has travelled around the world with the "Hiroshima Message". ***(Sunday Lunch Plenary Speaker)***

Carolyn Treadway has been part of Joanna Macy's Work That Reconnects since 1983. Trained also by Al Gore to be a Climate Leader, she "speaks for Earth" whenever she can. She is a life coach, therapist, and pastoral counselor.

Kendra Ulrich is the nuclear campaigner for Friends of the Earth. Prior to joining Friends of the Earth, she spent nearly a decade working on a variety of pollution and energy issues with environmental advocacy organizations. While in graduate school, she was selected as the Congressional Progressive Caucus fellow. During her graduate studies, she also served as the Freeze Our Fukushimas Outreach Coordinator for Beyond Nuclear. Most recently, she served as the New Hampshire Coordinator for Safe & Green Campaign and on the Coordinating Committee for the regional SAGE Alliance as part of a campaign to shut down the Vermont Yankee nuclear reactor. She holds an M.S. in Environmental Studies with a concentration in Advocacy for Social Justice and Sustainability from Antioch University New England.
Contact: www.foe.org

Akiko Yoshida of Tokyo, Japan, works with Friends of the Earth, Japan as Nuclear and Energy Campaigner. Her files include Fukushima evacuation and compensation, and Japan's nuclear phase-out and energy shift. ***(Saturday Lunch Plenary Speaker);*** **Contact:** +81-3-6907-7217(office) / +81-80-5173-0136(mobile)_ E-MAIL: yoshida@foejapan.org

Charmaine White Face, Zumila Wobaga, is the founder and coordinator of Defenders of the Black Hills. They are a group of volunteers without racial or tribal boundaries working to protect and preserve the environment of the1868 Fort Laramie Treaty Territory. Charmaine is a member of the Oglala Sioux Tribe and a former science teacher. She is currently a writer and organizer.
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Red Gate Woods: History's First Radioactive Dust Bin

By Kevin Kamps, Beyond Nuclear

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After seeing the site on a horseback ride with his wife and friends in the spring of 1942, U. of Chicago physicist A.H. Compton decided that a forested hill, 25 miles southwest of the Loop, was both near enough to, and far enough from, Chicago to serve as an ideal place for top secret, and potentially high-risk, Manhattan Project experiments. The aim was to beat Nazi Germany and Imperial Japan to the atomic bomb. Specifically, he planned for Enrico Fermi to build the world's first atomic "pile" (or reactor) at the spot he dubbed "Argonne" (after a bloody World War I Allied victory over German forces in France, in which 300,000 soldiers perished). However, due to a labor strike and other delays, the site was not ready by the time Fermi had assembled enough graphite moderator and fissile uranium for a critical mass.

But Fermi persuaded Compton the reactor could be operated safely enough at the U. of Chicago itself, in Hyde Park. As recounted by Harold Henderson in a 1987 *Chicago Reader* article ("Here Lies the World's First Nuke")[1], Compton wrote in his 1956 memoir, *Atomic Quest:*

"According to Fermi's calculations, which I carefully checked . . . it should take some minutes for the reaction to double its power. If this proved correct, there would be ample time for adjustments, and the reaction would be under full control. The only reason for doubt was that some new, unforeseen phenomenon might develop under the conditions of release of nuclear energy of such vastly greater power than anyone had previously handled. We were relying for safety on only a marginal fraction [less than 1 percent] of all the neutrons. Might perhaps some unknown process appear that would multiply the neutrons more abundantly [causing the chain reaction to continue out of control]? This we doubted; but as a precaution we would permit the reaction to grow only very slowly. . . . We would also take whatever other precautions we could think of, even though these might appear superfluous. . . . We did not see how a true nuclear explosion, such as that of an atomic bomb, could possibly occur. But the amount of potentially radio-active material present in the pile would be enormous [by 1942 standards] and anything that would cause excessive ionizing radiation in such a location would be intolerable."

Henderson concluded that Compton added, without conscious irony, "The outcome of the experiment might thus greatly affect the city."

So Fermi and his team of 49 scientists assembled what became known as CP-1 (for Chicago Pile) in an abandoned squash court under the Stagg Field football stadium at the U. of Chicago. CP-1 achieved a self-sustaining chain reaction, lasting 28 minutes long, on December 2, 1942, beginning at 3:25 p.m. local time.

A sigh of relief issued from the "suicide squad"[2] of three young scientists atop the pile, poised to pour cadmium onto the nuclear chain reaction -- as well as from the Safety Control Rod Axe Man (an origin of the term SCRAM, still used today[3]), standing ready to chop through a rope, looped over a pulley, holding a control rod designed to insert into the core -- if the experiment went out of control.

Official historians of the U.S. Atomic Energy Commission (AEC) later noted, with an oddly gleeful tone, that the "gamble" represented "a possibly catastrophic experiment in one of the most densely populated areas of the nation!"[4]

Perhaps sensing the grave military implications and historic portent, Fermi's assembled team of dozens of scientists drank a spontaneous toast to their "scientific achievement" – *in complete silence.*[5]

Compton chose a most ironic, impromptu code to communicate Fermi's successful self-sustaining chain reaction to James Conant, chairman of the National Defense Resource Committee:

Compton: The Italian navigator has landed in the New World.

Conant: How were the natives?

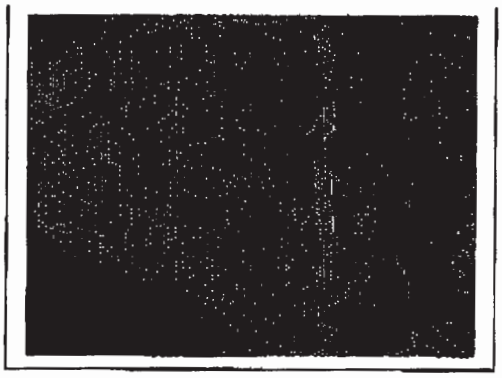
Compton: Very friendly.

(The Dene Indigenous People of Great Bear Lake, North West Territory, had already been exploited, and unknowingly been exposed to hazardous radioactivity, by the Canadian company Eldorado, in order to transport uranium ores, as early as 1931.[6] By 1942, Eldorado's uranium ores began to be utilized by the Manhattan Project.[7])

In July, 1945, the Manhattan Project raced to test and use its expensive "gadgets," as the opening shot across the bow of the Soviet Union in the nuclear arms race and Cold War to come, despite Nazi Germany already having been defeated, and Japan's Emperor's extension of peace feelers, as the U.S. Navy strangled the island nation in a complete blockade, as the U.S. fire-bombed Japan at will.[8]

CP-1 wouldn't be Fermi's last such nuclear gamble. Shortly before the experimental plutonium bomb blast code named "Trinity" at Alamogordo Bombing and Gunnery Range in the Jornada del Muerto Valley: "...Fermi was willing to bet anyone that the test would wipe out all life on Earth, with special odds on the mere destruction of the entire State of New Mexico!"[9] Although the Earth's atmosphere did not catch fire, the radioactive fallout did drift over the Mescalero Apache Indian Reservation not far away, making indigenous peoples, as well as White ranchers, the first Downwinders in history.

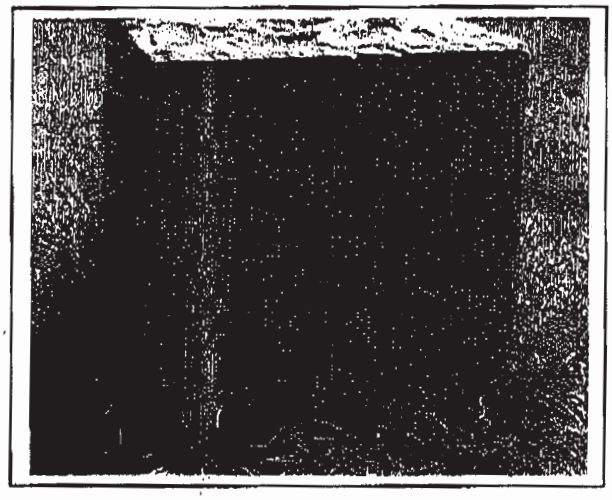
Even though the Argonne National Lab would relocate in 1947 to its current home, across the Des Plaines River in Du Page County,[10] the Cook County Forest Preserve near 95th and Archer -- Compton's original "Argonne Forest Lab" site -- was not to be spared. In February, 1943, Fermi dismantled his squash court CP-1, and reassembled it as CP-2 at Red Gate Woods. A number of additional reactors were built there over the next decade. Eventually, these prototype reactors would simply be buried in situ, toppled into deep holes dug adjacent to them and simply covered with dirt.



At the top of the hill at Red Gate Woods, a clearing with a granite boulder has the following message engraved in the stone: *"The world's first nuclear reactor was rebuilt at this site in 1943 after initial operation at the University of Chicago. This reactor (CP-2) and the first heavy water moderated reactor (CP-3) were major facilities around which developed the Argonne National Laboratory. This site was released by the laboratory in 1956, and the U.S. Atomic Energy Commission then buried the reactors here."*

By "released by the laboratory," they mean returned to the Palos Division of the Forest Preserve District of Cook County, Illinois. Hiking and bicycling paths, as well as picnic grounds, would later be established. Most visitors would remain unaware of the radioactive contamination dating back to the 1940s and 1950s.

"Miscellaneous" radioactively contaminated waste dumping began immediately at Red Gate Woods in 1943. For several years, little to no containerization was used (cardboard ice cream cartons sealed with tape, glass jars with screw top lids for the most intensely radioactive wastes, or nothing at all), wastes were dumped into open pits, and no records were kept. Ultimately, around 1,400 55-gallon drums worth of such radioactive wastes were simply abandoned in place, the dumpsites simply covered with dirt and seeded with grass. After 7 years, this "Plot M" (M for Miscellaneous, as in wastes?!) was capped with an inverted concrete box, measuring 1 foot thick, with side walls extending down 8 feet, and covered with 2.5 feet of dirt on top. Plot M is marked with a simple stone marker which reads: *"Caution -- do not dig. Buried in this area is radioactive material, from nuclear research conducted here 1943-1949. Burial area is marked by six corner markers 100 feet from this center point. There is no danger to visitors. --U.S. Department of Energy, 1978."*



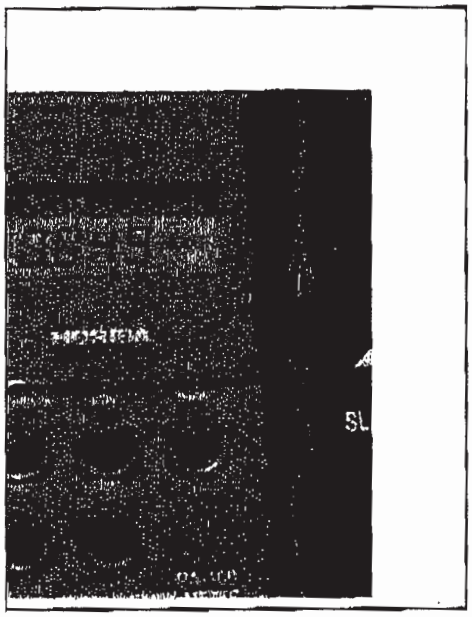
Even though steel bin containers were eventually used, and shipped out West, radioactive spills onto the ground occurred at Red Gate Woods. The irradiated nuclear fuel was reportedly shipped off for reprocessing, storage, and/or disposal elsewhere.

As reported by the 1987 *Chicago Reader* article, environmental monitoring tests were few and far between over several decades. For the first 25 years, soil samples were all that was taken – surface uranium contamination, likely from spills, was detected. Other radioactive hazards detected in soil have included: plutonium, cesium-137, cobalt-60, antimony-125, europium-155, and strontium-90.

When it dawned on Department of Energy officials that water sampling was also in order, they were shocked by the results. In 1975, the highest concentration of tritium in a public water supply in the entire State of Illinois, 14,000 picocuries/liter, was documented in a picnic area well at Red Gate Woods, downstream from the radioactive waste dump. A State Department of Public Health official recommended the well be padlocked closed.

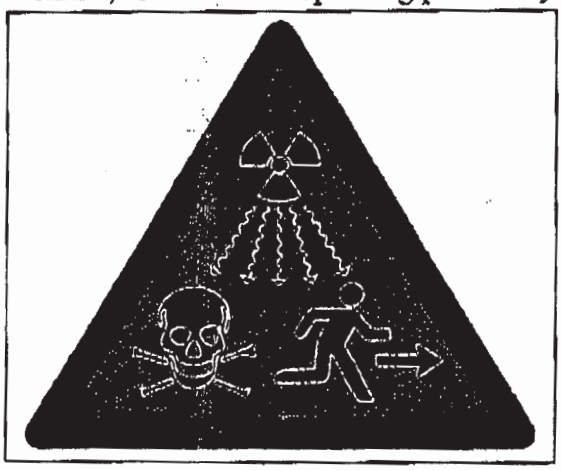
But by the mid-1980s, the worst tritium contamination documented was found in surface waters, specifically an intermittent stream that drains the site. Whereas no elevated tritium levels were found upstream, contamination measuring 1 million pCi/L (50 times the U.S. Environmental Protection Agency (EPA) Safe Drinking Water Act (SDWA) limit of 20,000 pCi/L) has been detected next to the site, and 2 million pCi/L (100 times in excess of EPA SDWA limits) downstream. In addition, Sr-90 and Pu-239 have been detected in surface waters and sediments, Cs-137 in sediment, and U and Neptunium-237 in surface waters. The stream drains into the old Illinois and Michigan Canal on the west side of Archer Avenue, then into the Illinois River system and downstate.

Conclusion:



Red Gate Woods is emblematic of the mountain of radioactive waste now 70 years high. It may be the first radioactive waste dump turned into a public park, a nefarious practice continued right up to the present day by the nuclear establishment, as with the attempt to open the Rocky Flats nuclear weapons site to public recreation as a federal wildlife refuge, despite severe plutonium and other radioactive and toxic chemical contamination of soil, groundwater, surface waters, flora and fauna.

What began in Chicago, must be ended in Chicago. An "Ending the Nuclear Age" conference is being held from December 1-3, 2012 to mark the 70th year since Fermi's CP-1 experiment. A fact-finding field trip to Red Gate Woods is being organized as well. Organizers will take radiation monitors to the site, as well as radioactivity hazard signs to leave behind, to warn unsuspecting passersby about the poorly marked, rarely monitored, long-lasting hazards buried beneath their feet. Research and watchdogging vigilance must continue forevermore, to protect the living environment at Red Gate Woods from what's still buried there. But the same can be said about the nearly 70,000 metric tons of commercial irradiated nuclear fuel, and over 10,000 metric tons of nuclear weapons complex high-level radioactive waste, that has accumulated in the U.S. since the Manhattan Project. While isolating what already exists will be the ongoing challenge of current and all future generations, the time has come to stop making any more of it. The only solution to the 70 year old problem of radioactive waste is to not make any more in the first place. O



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[1] http://www.chicagoreader.com/chicago/here-lies-the-worlds-first-nuke/Content?oid=870570
[2] http://jnm.snmjournals.org/content/18/6/588.full.pdf
[3] http://jnm.snmjournals.org/cgi/reprint/18/6/588.pdf
[4] http://web.archive.org/web/20101122183641/http://www.cfo.doe.gov/me70/manhattan/cp-1_critical.htm
[5] http://www.youtube.com/watch?v=0tKf7R2XncM
[6] http://www.ccnr.org/dene.html
[7] http://www.ccnr.org/uranium_events.html
[8] Gar Alperovitz, The Decision to Use the Atomic Bomb, 1995: http://www.garalperovitz.com/atomic-bomb/
[9] http://www.cddc.vt.edu/host/atomic/trinity/trinity1.html
[10] Now, ironically enough, the world headquarters of Exelon Nuclear, the largest commercial nuclear utlity in the United States, based in the town of Warrenville.

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