

To → Secretary of the Commission
U.S. Nuclear Regulatory Commission
Docketing & Service Branch
Washington, DC 20555



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PROPOSED RULE

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THE UNIVERSITY OF ALABAMA
College of Arts and Sciences

OFFICE
DOCKETING & SERVICE
BRANCH

Department of Biology

To Considerations of
the US NRC revision of
regulations in 10CFR 40
proposed rules 9-Jan, 1986
Sixteen enclosures
Seventeen

Louis G. Williams PhD
Emeritus Professor of Ecology
University of Alabama
1246 Northwood Lake
Northport, AL 35476
Feb. 8, 1986
(205) 339-1535

For many years (as you may ascertain from
the enclosed mimeographed information sheets) I have
been engaged in many NRC permitting activities.
Currently my thrust is directed toward regulation
of licensing materials such as nuclear fuel fabrication,
reprocessing spent fuel and nuclear weapons residues, and
formation of the Southeast Interstate Low-Level
Radioactive Waste Compact.

Many of your current and past efforts
to regulate by setting standards for the
management of licensing materials have been subjects
of my numerous newsletters and official statements
at numerous public hearings.

Most of my contacts with the NRC were
concerned with the proposal (USNRC Docket # 70-2909)
for Westinghouse to build a nuclear fuel fabrication
plant at Prather, Alabama. Westinghouse withdrew
its application. (Seventeen enclosures).

Currently I will be trying to participate in
any rules concerning the nuclear fuel cycle in the
Southeast; particularly, in Alabama.

Sincerely

Louis G. Williams

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Acknowledged by 66rd

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PUBLIC HEARING
DEMOCRACY

ON THE MANAGEMENT OF COMMERCIALLY GENERATED RADIOACTIVE WASTE. Conducted by the U. S. Department of Energy at the Atlanta Civic Center, 395 Piedmont Avenue, N. E., Atlanta, Georgia, on September 25-26, 1979.

Subject:— Oral comments on the GENERIC ENVIRONMENTAL IMPACT STATEMENT (GEIS), relative to the selection of strategies by the Department of Energy for helping with the selection compatible with the environment.

From:—Louis G. WILLIAMS, Ph. D.,
Emeritus professor University of Alabama, and authority on the fate of radionuclides in the aquatic environment from an aquatic ecologist
Home address:— 1246 Northwood Lake, NORTHPORT, Alabama 35476
205-339-1535.

PERFORMANCE CRITERIA

The Department of Energy (DOE) document EIS-0046D, April 1979, considers alternative proposals for permanent isolation (disposal) of high-level radioactive waste, the most hazardous of which is ²³⁹Plutonium.

The Generic Environmental Impact statement (GEIS) does not review waste management for the Liquid Metal Fast Breeder Reactor (LMFBR). Because the LMFBR would use plutonium as a fuel, a first order of priority should be to decide whether breeders will be developed in this country. If we are not going for breeders (I hope not), then spent fuels are to be considered as heavy-level wastes. Their interim storage would only be for "cooling" them down both thermally and radioactively until they could be permanently disposed (called isolation by the DOE and the NRC). This interim storage in water may require about six years.

The GEIS report cites radwastes from reprocessing (taking out plutonium) of spent fuels of current reactors. Apparently this leaves the door open for using plutonium as a fuel in breeders.

The U. S. is now negotiating with Japan for building a breeder there and using island storage for spent fuels. Would this be a step toward using breeders in the U. S.?

CURRENT HIGH-LEVEL RAD WASTES

The once-through fuel cycle of conventional nuclear power plants produce spent fuel which should be treated as high-level radwaste. This spent fuel should not be considered as a potential fuel because it contains large amounts of plutonium, which might be used as fuel in a breeder reactor, or when partitioned, into a bomb, with bad social implications.



ALTERNATIVES TO DISPOSAL

The principal waste disposal strategy of the GEIS is (1) burial in geological formations using conventional mining techniques, however, some consideration has been given to:— (2) chemical resynthesis, (3) very deep hole, (4) rock melting, (5) island disposal, (6) sub-seabed geological disposal, (7) ice sheet disposal, (8) reverse well disposal, (9) partitioning and transmutation, (10) space disposal.

UNCONSIDERED CURRENT DISPOSAL

All of the above are for long-term disposal. However, the former AEC and the present NRC have been permitting discharges and unplanned leaks of radionuclides into the air, land and waterways.

This hearing is not limited to heavy-level wastes. The NRC and the EPA need to look into effects of low-level waste fission products which do build up in food webs and in sediments of river reservoirs and lakes. These can return to surface water in high concentration during bottom scour or turnover of river and lakes at which times they may be hazardous to public drinking water supplies, and to the aquatic biota.

Have the EPA and the NRC considered the fact that the organisms of lakes and streams have not read the regulations, so they have not learned that they should not be concentrating waste fission products. Engineers have always said that dilution is the solution to pollution, but trace metals and some nuclides do not stay diluted. These are near term problem, while plutonium, ¹³⁷cesium, and ⁹⁰strontium are long-term problems. Iodine-¹³¹ is a near-term problem from the air from some current operating nuclear power plants, and it does build up in the thyroid glands and milk from cows. (MORE ON THE OVER SIDE).

*To NRC item one From Louis G. Williams
Feb. 8, 1981*

FALLOUT FROM AIR

Fallout from nuclear test by the U. S. in the air in the fifties as well as from recent Chinese tests, did affect food webs to mankind and his and her domestic animals, including areas of concentration in Alabama.

The recent incidence rate of human cancers has dramatically dropped. Could this be related to the fact that enough time has elapsed since we, and the Russians, stopped air-testing, to now show a reduction in the present lower incidence of human cancer?

My crude and tentative studies of fallout of ¹³¹Iodine from present nukes in Alabama does show a low, but significant build up in thyroids of cattle grazing near nukes.

My studies in the middle fifties and early sixties showed significant concentrations after food-web build up in the major rivers and Great Lakes, while I was a civil service scientist for the U. S. Public Health Service and the Department of the Interior. There was a direct relationship of the high concentration of radionuclides in the plankton to air-testing of atomic weapons by the U. S. Certainly drinking water supplies are affected when large blooms of algae die-off to release fission products into the water.

My studies below Oak Ridge, Tenn. and below Browns Ferry show highest concentrations down stream in the biota and sediments of Lake Pickwick, a river reservoir of the Tennessee River. Some of these radioactive substances originate from Oak Ridge and most of the others come from Browns Ferry.

INADEQUACY OF GEIS

The present Generic Environmental Impact Statement does not address the problems associated with the permitted and planned discharges of low-level radwastes to the environment from currently operating light water reactors (and Chinese air testing). The GEIS deals mostly with long-term, heavy level radwastes. The NRC, EPA, and DOE should now in the light of these findings recognize that low and intermediate level waste fission products do not remain low and that they may be a very significant cause of unwanted genetic and birth defects in addition to causes of cancers. One must remember that there is NO THRESHOLD below which there is no damage from ionizing radiation. We should use the safety factor in allowing beneficial uses of radiation for medical diagnosis and treatment.

ANTINUKE DEMONSTRATIONS

The recent large antinuclear demonstrations in Washington and New York leave one with mixed emotions because the demonstrators give many reasons for their attendance that may be unrelated to antimukism (music, antiwar, antiestablishment, apathy of big bureaucracy, energy cartels, etc.).

However, I believe cases can be made against conventional nuclear power plants on health, safety and economic reasoning.

A NO NUKE IS A GOOD NUKE!

MASS MEDIA FAIRNESS

All citizens, young and old, will buy the case against nuclear power only if the mass news media and the powerful energy lobbies are fully exposed to the public. The pronuclear groups must stop talking about radiation and begin speaking about radioactive substances that will be around for some 200,000 years to detrimentally affect life (metabolism) of all biota on our finite planet. Monitoring for hazardous wastes when radioactive does NOT include the total number of years necessary to accumulate to decay one unit mass of plutonium. Plutonium, the most hazardous substances on earth, is still increasing very rapidly from nuke operations, while we have NO SAFE methods of its disposal.

MENTAL POLLUTION

Much of the pollution in this country and around the world is mental. People have been confused because they have been led to believe that electricity would be cheap and safe. My own research, since 1950, has repeatedly demonstrated that products of nuclear fission are harmful to ecosystems, hard to control, and when all costs are included very uneconomical.

DO WE WANT BREEDERS?

A commercial-size breeder, the supra-phenix, is under construction in France. This European technology may be ten years ahead of the United States. So we do not need to build a demonstration Liquid metal fast breeder reactor unless we find out that the Superphenix is a success. The Super phenix is being built by France, Italy and Great Britain in France. Our country would do well to go for coal, since we have a 400-year supply and become less and less dependent on oil to generate electricity. Petroleum should be used for lubrication, plastics, fertilizers, and drugs. Burning is a waste. Alabama has huge reserves of coal. We, in Alabama, need to bring in someone like a Von Braun or a Japanese to show us how to use our physical and human resources to use coal for oil to generate electricity. There are proven technologies for cleaning up coal to protect the environment. The high carbon dioxide build up in the air is a hoax. There will be no large greenhouse effect because the first limiting factor in the ocean and over land is too little CO₂. The largest biomasses of biomasses carrying on photosynthesis in the ocean are the phytoplankton. The scientific committeemen reporting to Congress did not know how to make this scientific judgment, but they took the advice from three pronuclear scientists. Much that is being done now from non-renewable energy resources can be done better and safer from solar energy.

Let's wait on the President's Blue Ribbon Committee to report on the Three Mile Island Accident before going for more nukism. No Waste isolation pilot plant may be a success, but we must take care of huge stocks of present nuclear wastes from weapons development.

EPA Healthy Dialogue

What
are
NUKES
and
KOOKS?

From Louis G. WILLIAMS, Ph. D.,

1246 Northwood Lake
NORTHPORT, Alabama 35476

May 12, 1983

(205) 339-1535

Attention:— U. S. Environmental
Protection Agency (EPA)

Subject:— Public Hearing regarding the
environmental standards for the
management and final disposal of high-
level radioactive waste (used nuclear
fuel and refuse from nuclear weapons
development).

Reference:— US EPA Docket No. R-82-3.

Place:— Auditorium, North Building of
the Health and Human Services.
Independence Avenue, SW on C Street,
Washington, DC.

Hearing dates:— May 12 and 13, 1983.

PRIME CONSIDERATE

To build bridges of communication among federal-state agencies, and to promote beneficial concepts among current engineers, scientists, lawyers, ministers, and the vast uniformed lay public for the survival of humankind in an environment growing with newly-generated toxic, hazardous and ionizing materials. Natural uranium ores, left in their geological formations, are not a threat to this and future generations. If Homo sapiens must continue to derive electric energy and materials for security and war, we must develop and preach sane policies and government (national and multinational) regulations that are discernable and also enforceable. The priority to preserve must be greater than to destroy humans and their resources.

FOCUS

Much more attention must be given to carcinogens, chemical and ionizing, and to the current scientific and technological knowledge of prime causes of the undesirable hereditary and birth defects while trying, at the same time, to use fission for both peace and war. Current research on understanding how DNA, the genetic material in each cell nucleus, must continue to find ways of mending environmentally-damaged DNA. Far more emphasis must be given to chemically-following the pathways of ionizing materials (rather than radiation, per se) for the benefits of "all" organisms, since even "humans" cannot read nor interpret current-day regulations. Those who formulate regulations must have an abiding code of ethics to all of humanity.

WHOSE ORCHESTRATION

Alabama is being groomed for reprocessing reactor spent fuel wastes and high-level military radwastes, because the State has many advantages such as:— EPA-approved toxic and hazardous waste site in the large deposits of chalk (lime-clay) of the black-belt counties of Alabama. What was formerly "low-level" radwaste has now been changed to a nonexistent status as it is the "same" as background radiation. This can only be true in relatively rare areas of natural leaching. The by-products of operating a nuclear power plant or a military operation release many NEW materials to circulate in food webs and human tissues than are found in natural background from undisturbed ore deposits. The use of depleted uranium is (after removing the fissile uranium-235) is most misleading since the balance of uranium remaining after the enrichment process is still 99.3 percent of the original uranium. This uranium-238, while not fissile, is extremely toxic. The practice of adding back fission waste until the ratio is again 99.3% to 0.7% uranium-235 is a perpetration crime. Low and intermediate level radwastes are now being accepted for disposal in the chalk dumpsite at Emelle, Alabama.

Inasmuch as reprocessing will produce huge amounts of toxic, hazardous, and ionizing wastes of all levels, the orchestrators are pointing out all of their benefits. Some of these are accessible interstate highways, barge traffic, future new breeding processes, new laser means of uranium enrichment and plutonium-239 recovery, with one of the proposed prime storage or final disposal sites in the nearby Richton, Mississippi salt domes. The Tenn-Tom Waterway will allow the return of spent fuel from reactors around the world for reprocessing.

The Supreme Court ruling that the regulators must come up with an acceptable method of safe-disposal of high-level radwaste will put a new focus on whether long-lived, high-level transuranic wastes and the important link between nuclear power for generating electricity and nuclear power for preventing or causing war. Since all agree that no country or person wins in an all out nuclear war, this country, that dropped the first atom bomb, must be quickly educated to the real peril of both the nuclear arms race and the relationships to nuclear power plants, enrichment, reprocessing, and permanent DNA damage.

The above is a brand of clout from Louis G. WILLIAMS, Ph. D., Emeritus Professor of Ecology, University, Alabama 35486., not necessarily those of the University.

TO NRC item two from Louis G. Williams 2-8-86

"Ruling on nuclear waste," (SN: 8/24/85, p. 119) exposes the typical jargon that has been developed over the last 40 years to the mass media to protect the operations by the AEC, NRC, DOE and DOD which has the effect of disguising real risks from operations of commercial reactors and the development of nuclear weapons, by using "radioactive," which does not leak, rather than ionizing materials of commercial reactors and development of nuclear weapons, which do."

"Depleted" or spent nuclear fuel is not depleted or spent because these ionizing materials contain a larger proportion of dangerous fissile materials. "Isolate" should not infer safe disposal or storage of radionuclides because no geologist is able to guarantee constant fail-safe conditions for 10,000 years, while these radionuclides will be ionizing their environments for millions of years.

~~There is a poor relationship between Using unmined uranium ore as a standard to estimate leakage from a "repository" that would contain many toxic and hazardous stable chemicals as well as ionizing or radwaste which are mostly absent in unmined or uranium ores suggested as the standard. After going through a nuclear fuel or weapons cycle radionuclides are more contaminating simply because they have been disseminated into the environment occupied by biota, including humans, some of which greatly accumulate. Before wholesale fission and fusion we did not have a problem.~~ //

Louis G. Williams, Ph. D.

Louis G. Williams

SCIENCE NEWS, VOL. 128

AUGUST 24, 1985

Ruling on nuclear waste

Pulsed by a court order, the Environmental Protection Agency (EPA) last week issued rules strictly limiting the radiation that may be allowed to leak into the human environment as the result of the burial of high-level radioactive waste. The new rules apply both to military nuclear waste and to depleted nuclear fuel from commercial reactors.

The EPA rules, more than nine years in the making (SN: 10/6/81, p. 24), establish the general environmental standards for radionuclides that any storage or disposal facility must meet. This means that the Department of Energy (DOE), supervised by the Nuclear Regulatory Commission, must design and construct underground repositories that isolate nuclear waste for at least 10,000 years. If these containment requirements are met, EPA expects that no more than one cancer death per decade should result from any radiation leaks over a repository's lifetime.

The small residual risks allowed by the disposal standards are comparable to those faced by future generations," says EPA Administrator Lee M. Thomas. "If the uranium ore used to produce the waste had not been mined to begin with,"

EPA missed its deadline for issuing environmental standards, as specified by the Nuclear Waste Policy Act, by more than a year. Delays also plague DOE's search for a repository site. Late last year, DOE narrowed its search to three locations (SN: 11/5/85, p. 6), but lawsuits disputing the choices now blanket all three

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The Weekly Newsmagazine of Science

SCIENCE NEWS, VOL. 128

SEPTEMBER 28, 1985

Letters

Disguising risks with jargon

"Ruling on nuclear waste" (SN: 8/24/85, p. 119) exposes the typical jargon that has been developed over the last 40 years and is presented to the mass media to protect the operations by the Atomic Energy Commission, Nuclear Regulatory Commission, Department of Defense and Department of Energy, disguising real risks from operations of commercial reactors and the development of nuclear weapons.

"Depleted" or spent nuclear fuel is not de-

pleted or spent, because these ionizing materials contain a larger proportion of dangerous fissile materials. "Isolate" should not imply safe disposal or storage of radionuclides, because no geologist is able to guarantee constant fail-safe conditions for 10,000 years, while these radionuclides will be ionizing their environments for millions of years.

Unmined uranium ore is a poor standard for estimating leakage from a "repository" that would contain many toxic and hazardous stable chemicals as well as ionizing radwaste. After going through a nuclear fuel or weapons cycle, radionuclides are more contaminating simply because they have been disseminated into the environment occupied by biota, some of which greatly accumulate.

Louis G. Williams
Northport, Ala.

Louis G. WILLIAMS, Ph. D.,
1216 Northwood Lake
Northport, AL 35476 195

To NRC item three
from Louis G. Williams
Feb. 6, 1986

Incineration creates health problems

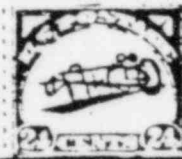
Tuscaloosa, Northport and Tuscaloosa County are now in the throes of discussing the future of the troubled Tuscaloosa garbage incinerator, which began burning garbage in April 1984. There have been many discussions concerning cost overruns and future financing, but far too little has been reported about factors of health safety.

Products of combustion at the Solid Waste Authority's "garbage" incinerator in Tuscaloosa have been inadequately explained to the public. These are very hazardous materials that originate during incineration and are in addition to the principal organic hazardous substances that are fed into the incinerator. The total toxicity of the newly-formed cancerous and toxic materials could greatly exceed those that are tipped into the incinerator according to bottom-line reports of research by the EPA.

While incineration greatly reduces the volume of unwanted organic materials as solids by forming invisible gases such as carbon dioxide and water vapor, the incineration process also forms totally new compounds into the air with gases that are frequently cancer-causing in extremely low concentrations, such as in one part of discharged air to one trillionth part of cancer-causing substances. These are very toxic at detection limits far below those that are being measured at the Tuscaloosa solid waste incinerator.

The bottom line is that the materials being tipped into this incinerator, on a weight basis before incineration, are not very toxic, however, following incineration new substances are formed and discharged to the air that are extremely toxic at very low concentration.

MORNING



MAIL

Current incineration has now been evaluated by the U.S. Environmental Protection Agency, which definitely proves that extremely toxic dioxins and furans are products of incomplete combustion (as in the Tuscaloosa incinerator) and are present in most municipal incinerator effluents. Acid rain plus these toxins have resulted in the closing of many garbage incinerators until the toxicity problem can be resolved.

Additionally incineration does not destroy metals some of which are also very toxic in low concentrations. Many organic toxic compounds are derived from the incineration of plastics, which abound in domestic garbage, which go to the air. When waste managers can cost-effectively find a way to remove these toxic effluents to the air and capture them in the ash and residue for landfill disposal perhaps incineration will be a safe, cost-effective option.

According to EPA the Consumat incinerator at Tuscaloosa is a refuse (not garbage) incinerator. Attempts, however, to use brush and steel belted tires and other things have not worked. Unbelated and old tires are burned and supply as much calories as coal to produce steam for the BF Goodrich Rubber plant. Unfortunately burning tires produces a lot of sulphur dioxide to the air which becomes sulfuric acid and is very corrosive and adds to the acid rain problem.

Promoters of this incinerator have made efforts to attract new industries with an understanding that they may be permitted to burn their wastes here. However, the Solid Waste Authority should understand that some industrial wastes during incineration produce toxins, acids and metals that will not meet new specifications of the Conservation and Recovery Act.

Many cities in the North have closed municipal incinerators because they produce acid rain and toxic air, which moves all the way to Canada. In our area we have huge resources for disposal in strip mine pits that could provide a far safer and more cost-effective way for disposing garbage. Some northern cities may have to use incineration, but it will be very costly to operate and will use means of waste management impractical for Tuscaloosa.

Risk acceptability in Alabama is a problem because what is invisible and without odor in the air from incineration effluents needs a lot of education and careful local scrutiny from trustworthy experts before decisions can be made whether to continue the current incineration of "garbage" or going again for more landfilling.

In the populated North with more financial resources, I would say to go with a kind of incineration that scrubs out pollutants to the air.

For Alabama, at the current state of our technology and its management in incineration, I would recommend more landfilling which could be both efficient and health-safe as well as cost-effective, when all of the people are involved.

Louis G. Williams, Ph.D.
1246 Northwood Lake
Northport, AL 35476

Louis G. Williams

Current monitoring does not include incoming materials; is done routinely four times per year for a few parameters which do not include dioxins, furans and toxic heavy metals, from stack to the air. U. S. EPA region 4 in Atlanta allows each state to propose rules for management of its wastes. From the uniform US standards Alabama may have lower, the same as, or higher than the uniform US standards.

Risk acceptability is a major problem in Alabama for lack of technical understanding.

Dioxins and furans have been found in Lake Siskiwit, a large remote lake in the middle of Lake Superior, where all of them are derived from the air from rain. Burning plastics in garbage produces many toxic substances.

*To NRC item four from Louis G. Williams
Feb. 8, 1986*

(mailed out to various
scientists for comments by
Louis G. Williams)

To: ~~_____~~

Since you have been especially selected and involved in dealing with the health effects of ionizing radiation, I am writing to you for some suggestions on how to cope with the problems of winning a case of the Safe Energy Alliance of Central Alabama (SEACA) against the Westinghouse Electric Corporation (WEC) which is in the process of getting a license from the US NRC to build and operate a Nuclear Fuel Plant at Prattville, Alabama.

U. S. NRC Docket Number 70-2909

The National Academy of Science's standing committee (to congress) on the Biological Effects of Ionizing Radiation (BEIR) has submitted its report. However, the questions at the two-day meeting in mid-March dealt more with what basic ethics should be used, what basic assumptions of science can be used, policy, and what is NOW considered as certainty. What does the word "significant" mean? (Rather than "important").

All speakers at this meeting indicated that it is now time to begin regulating more firmly. It is now time to stop looking for simple answers to complex radiation problems. However, the new federal administration appears to be on a binge to deregulate more. Would this not lead to more "Three-Mile-Island-like problems?"

The fact that equal doses of different kinds of radiations (alpha, beta, gamma, x-rays, neutrons etc.) and different radionuclides (cesium-137, strontium-90, iodine-131, carbon-14) have very different effects. Duration effects between transuranics and actinides.

The fact that equal doses of different kinds of radiations and nuclides do not produce equal biological effects makes rule-making and real regulation most difficult.

How-to-quantify uranium and plutonium may allow large doses of alphas to go unnoticed.

The question of high-versus-low Linear Energy Transfer (LET) is producing two opposite schools (NRC and the Nuclear power industry seem to favor some kind of threshold level, while many, who are working with low-level ionizers, now see accrued hazards from several doses over a period of time.

Using the Code of Federal Regulations for dealing with Nuclear Fuel Plants one can plainly understand that "no room" is allowed for input from organisms that have not read or understood the "rules".

Allowable concentrations of air, water, and soil concentrations fail to take into account concentration factors that may be thousands of times higher than the emission standards. Most radionuclides have cycling patterns that do not follow the code of federal regulations. How can these kind of data be made admissible at an NRC hearing?

Also, these questions need now answers:— Will cancers soon be curable from future findings of biochemistry? Can drugs be developed that will prevent cancers? Will mutagenesis and birth defects still be problems after preventives and cures for cancers are found?

From Louis G. Williams, Ph. D.
1246 Northwood Lake
Northport, Alabama 35476
December 31, 1980
205-339-1535

How can chemical carcinogens be distinguished from those that arise from radionuclides and other ionization?

In November 1980 the Final Report on the feasibility of Epidemiologic investigations of health effects of low-level ionizing radiation was published by the Health Systems Division of Equifax, Inc. for the Office of Standards Development of the U. S. Nuclear Regulatory Commission (NRC File No. B1090-9) and (NUREG/CR-1728).

Is this, above, document to be the BIBLE for rule-making by NRC? Already the Westinghouse concept of low-level radiation is to dilute uranium-235 with depleted uranium until it is no longer low level. Don't "all" uranium isotopes produce unwanted alphas? Can the NRC and the Nuclear Industry rest heavily on social and political considerations rather than on scientific data? This methods gives "big" rewards for good M. to a society that does not understand the real problems of the nuclear age.

Is 5 rems single dose or accumulative for a year, a safe standard? Would a study of groups with 50 rems and extrapolation downward really arrive at truth? Do Three-Mile-Island workers warrant special considerations? Should not more study be made of radioactive substances rather than radiation per se?

Preliminary hearings have already been held by WEC-NRC-SEACA about the proposed Nuclear Fuel Plant. An environmental Impact Statement is now being prepared by Westinghouse. Their environmental (preliminary) report was very unsatisfactory to me. I am the science advisor to the attorney representing the SEACA. However, I am also unhappy because I will be represented (?) by the attorney for SEACA and will not be able to speak to issues myself at the hearing. I must accept the contentions allowed and worded by SEACA's attorney. I am told by a well known scientific antimike spokesman that 127 cases by NRC or AEC similar to this one have all been failures based on regulations for these kind of hearings. I do not like ALAPA's, nor agreement states. I believe that Cost/Benefit favors the nuclear industry at a detrimental cost to the private citizen. I do not believe that the present fission route is economically feasible, and I do not believe that the federal government nor the utility rate structure should bear the costs (subsidies) of Three-Mile-Islands, Insurance, nor uranium-235 enrichment. I dislike the way utilities use media advertising (which are often untruths or irresponsible) to sell nuclear power and in this case the Westinghouse Nuclear Fuel Plant for Prattville, Ala.

As a private citizen I cannot afford to match the wealth of Westinghouse advertising. I am working free, with no financial help from anyone. I believe that my experience gives me a better brand of truth (Please do read a couple of my enclosed mimeographed handout sheets). However, I feel that I will be another victim (number 128 to 0) of the losers via the NRC-hearing route.

I would welcome some advice help on how to become a winner via NRC route or the federal courts on constitutional grounds that individual and group civil and human rights are being violated.

Please do respond! Whether pro or con this would help.

Sincerely,

To NRC from five from
Louis G. Williams EX 6 1986

Louis G. Williams

Date— January 27, 1981.

Place— Public Hearing dealing with the Management of Chemical hazardous Wastes. Beard Building by State Department of Health Montgomery, Alabama, at 7:30 p.m.

From— Louis G. WILLIAMS, Ph. D., Emeritus Professor of Ecology University of Alabama.

Home address:—
1246 Northwood Lake
Northport, AL 35476

The Safe Energy Alliance of Central Alabama (SEACA) is trying to win its case against the Westinghouse Electric Corporation (WEC), which is in the process of getting a license from the U.S. Nuclear Regulatory Commission (NRC) to build and to operate a Nuclear Fuel Plant at Prattville, Alabama. This is U. S. NRC Docket Number 70-2909.

The State of ALABAMA must also issue permits or licenses for many of the safety and health aspects of this WEC operation. Jurisdiction for protection of citizens, atomic workers, emergency evacuation, decommissioning, and management of radioactive wastes rest with the STATE, not with the Nuclear Regulatory Commission.

SUBJECT

Westinghouse wishes to propose that radioactive wastes for this operation be defined as any materials having more than 3.6×10^{-4} , or .00036 microcuries per gram of waste per gram, or 0.36 thousandths of a curie, per gram. Nuclear fuel with 5% enriched uranium would have 2.4 microcuries per gram of specific radioactivity from Uranium-235. Normal fuel, with 3% enriched uranium has only 1.57 microcuries per gram.

Alabama is an AGREEMENT STATE, meaning that the State of Alabama (Not NRC) may regulate what is radioactive wastes for the Westinghouse proposed nuclear fuel plant and for the Farley Nuclear Plant.

QUESTION

Westinghouse is proposing in its license application and environmental report to add depleted uranium (this is what is left after enrichment at Oak Ridge, or Portsmouth, after removing most of the U-235). However, depleted uranium is NOT depleted of uranium. It still has large quantities of U-238 and U-234. The U-234 is also enriched along with the fissile U-235. However, U-234 and U-238 are highly "unwanted". WEC is asking authority to dilute, which they call "degrade" their uranium wastes with depleted uranium to natural isotopic uranium content (0.7% of U-235), and to stabilize to solid cement form for burial as a hazardous (but non-radioactive) waste.

This dilution proposal is made on the assumption (p. 7-13 of Westinghouse Environmental Report) that the State Department of Health of Alabama agrees that the total uranium content is acceptable. The State Department needs to realize that this would mean a huge increase in total unwanted uranium, and a great increase in the amount of uranium-234.

This also means that "radwastes" from the Oak Ridge gaseous diffusion (enrichment) plant would be shipped to the proposed Prattville Fuel Plant and that it would be used to "dilute" the solid radwastes produced at the Prattville Fuel Plant to "dilute" it to isotopic uranium which is approximately 0.7% U-235.

This means that for every molecule of U-235 to be diluted about 99 would have to be brought in from Oak Ridge. However, this would NOT be natural uranium mixture, since it would contain huge amounts of unwanted U-234, and more U-238, which is also a bad alpha emitter. Both U-235 and U-238 should be considered contaminants and, therefore, additional pollution to Alabama. The citizens of Alabama do not want to solve this problem by bringing in more radwastes to be buried in Alabama.

REPROCESSED SCRAP

Westinghouse is proposing to return radwastes of uranium or "scrap" for reprocessing at Prattville from all over the world. This is a dirty chemical operation, which would only contaminate Alabama (air, water, and land) more.

Does the State Department of Health wish to label this kind of operation "NONRADIOACTIVE" so that these wastes may be buried either on the WEC site or in a state-approved chemical hazardous waste dump? If so such a dump, as at Enelle, AL, in Sumpter County would then be receiving both chemical and radioactive wastes. In addition to these unwanted uranium wastes the chemical wastes from the Westinghouse operation will include "H U G E" amounts of very chemical dangerous calcium fluoride and other chemical hazardous wastes.

The transportation of hazardous materials to and from the Prattville operation will be the Liability of the State of Alabama to manage. Occupational Health and Safety will also belong to Alabama.

Do we really want this Nuclear Fuel Plant?

Sincerely,

Louis G. Williams

Louis G. WILLIAMS

Prattville Fuel Plant Valid Contentions

March 4, 1981

From:— Louis G. WILLIAMS, Ph. D.,
Aquatic Ecologist and Science
advisor for the Safe Energy
Alliance of Central Alabama (SEACA)
1246 Northwood Lake
Northport, Alabama 35476
Via:— Mr. Julian L. McPhillips, Jr.,
Attorney for SEACA
P. O. Box 64
Montgomery, AL 36101

To:— The Atomic Safety and Licensing Bd.
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

In the matter of the application of the
Westinghouse Electric Corporation for a
special Nuclear Material License for the
Alabama Nuclear Fuel Fabrication Plant,
U. S. NRC Docket No. 70-2909

This is a conditional application to
file for leave to intervene (Docket 70-2909)
according to 10 CFR 2.714 (a) (1), for Louis
G. Williams. I am certain that the Com-
mission is aware of the degree of my partic-
ipation (see enclosed release of handouts).

Should the attorney for SEACA, Mr.
Julian McPhillips, agree to modify his con-
tentions, using the below stated suggestions,
with concurrence of Westinghouse and the
Atomic Safety and Licensing Board, then no
intervention on my part will be necessary,
and I will withdraw this request.

SOME SUGGESTED MODIFICATIONS and/or CHANGES

Regarding Stipulations Number 2, filed on
February 25, 1981 and received on Feb. 28,
dealing with Deferred Contentions in Attach-
ment C, now supersedes all previous filings.
These deferred contentions should be
thoroughly discussed in this license appli-
cation because they deal with vital areas of
health and safety of atomic workers and the
citizens of the affected area and with
deferred costs to the area and perhaps to the
taxpayers.

Putting off these controversies until
after Westinghouse files the needed informa-
tion (i.e. NRC issuing a license) will be
too late to make a judgment. The public may
never be told that the NRC and Westinghouse,
and by agreement, the state of Alabama, are
not looking after the citizens vital interest
in such areas as (1) security, (2) decon-
tamination and decommissioning, (3) use of
Prattville sewage Treatment plant to handle
Westinghouse wastewater contaminated with
radioactive materials from its laundry and
waste from water of the cooling towers,
(4) use of huge amounts of water from the
Prattville Water Treatment Plant, (5) lack
of civil evacuation procedures for acci-
dents, sabotage, geological upheaval, etc.,
(6) spills of radioactive materials and/or
highly toxic materials within or near the
plant or on Alabama highways or into the
Alabama River from barge traffic, (7) lack of
adequate monitoring for criticality potential,
(8) Fire protection planning involving the
Prattville Fire Department, (8) security
planning, and emergency evacuation planning
for atomic workers and citizens, and (9) the
precisely spelled-out the role of the state
of Alabama as an "AGREEMENT" state, which
concerns where lies responsibility and
liability for unwanted costs and dangers.

UNSTIPULATED CONTENTIONS

The following deal with the Memorandum
in support of the unstipulated con-
tentions by the Safe Energy Alliance of
Central Alabama (SEACA), as proposed by
SEACA's attorney, Mr. Julian McPhillips,
filed on February 25, 1981. Attachment
B, pages 1 - 10, is a list of these
contentions. The Nuclear Regulatory
Commission's Safety and Licensing Board
may find that some of these contentions
ARE NOT ADMISSIBLE, which means that they
will NOT be debated at the formal hearing.

Page 5, paragraph 9 of this memoran-
dum in support of unstipulated contentions
deals with ionizing radiation dose models.
The writing is confusing. The most
hazardous of the radionuclides during the
normal operation will be particulates and
aerosols of all isotopes of uranium,
including U-238, U-235, U-234, and U-235,
and perhaps thorium-232, as one of the
ingredients in the "mixed oxides" as
referred to in the Westinghouse Environ-
mental Report and license application
(and perhaps plutonium dioxide?). If
Westinghouse is allowed to do this and
should this meet requirements as set
forth in 10 CFR 70.23(a) (3) and (4) than
the NRC rules should be challenged.

Paragraph 14, page 6 of the unstipu-
lated conditions, support for, deals with
a prototype, but fails to spell out that
this is "new" and perhaps unproven dry
process. We do not know whether the
kiln (furnace) can or will be operated
safely. Will it contribute hazards:—
(1) to atomic workers and the surrounding
environment from (1) fluorine and fluoride,
(2) from heavy metals derived from the
corrosion of the walls of the furnace,
(3) from inability to control the pre-
cision of the chemical reactions between
the conversion of UF₆ to UO₂ using gaseous
oxygen and hydrogen, and the freeing of
fluorine.

Paragraph 19, p. 7, apparently the
ALAPA principle or standard is a direct
challenge to 10 CFR 70.23(a), so SEACA
should state that it is an invalid
rule or standard, so that it may be turned
down by the NRC so that litigation in the
courts may begin.

Paragraph 22, p. 8, misses the point.
There are three serious threats to the
Alabama River and the Mobile Bay Estuary.
These are unacceptable concentrations of
radionuclides, nitrates, and heavy metals.
"Both" radioactive materials and especial-
ly compounds of nitrogen, mostly nitrates,
will degrade environmental quality.
Does Westinghouse propose to "sell" or
"give" its nitrate wastes to a papermill;
perhaps the near by Union Camp Paper Mill?
These proposed nitrate by products from
the Westinghouse operation will serve as
nutrients for the organisms degrading the
the paper mill wastes from their nitrate
content, which would help the paper mill
effluent to meet the EPA standards by
reducing significantly its organic load.
However these nitrates from Westinghouse
may be "named" nonradioactive and there-
fore acceptable. Will the heavy metal
content of the effluent to the Alabama
River be acceptable? Would not the
paper mill and NOT Westinghouse be re-
sponsible for the contamination from the
radwastes and the heavy metals?

(Sheet two of two continued on the over-
side of this sheet).

TO NRC Item SIX from
Louis G. Williams
Feb 8, 1981

Paragraph 29, page 9. Support of the memorandum of unstipulated contentions by SEACA attorney, Julian McPhillips (continued) There is no way to "DEGRADE" uranium-235, except by natural decay of U-235 to its daughter nuclei, or to fission products in a chain reaction. What degradation as done here "means" the adding of more unwanted U-238, U-233, and U-235. This adds to the total uranium content, therefore, this should not be allowed by Westinghouse, the state of Alabama, nor the NRC.

Paragraph 34, page 9. Personnel Dosimetry, dealing with both uranium oxides and plutonium oxides as now practised fail to take into consideration measurements from dosimeters or any other way from emissions of alpha particulates, that are known to be internal emitters following inhalation. Workers have these alpha emitters while both on duty as well as when off duty as at home. Uranium-235 does not give off betas nor gammas, and the dosimeters do not, therefore, accurately measure their very high ionization from alpha radioactivity within the body.

Paragraph 35, page 9, and paragraph 37 page 10:— Westinghouse seeks an exemption from the "increase" in uranium concentrations in the air (NOT "normal" concentrations of uranium). Again, how will these air borne concentrations be measured? Surely not from particulates trapped in HEPA filters, where aerosols are missed and where spikes, or high concentrations, cannot be measured. Certainly there must be some kind of a continuous accurate system for monitoring the actual quantities of these bad alpha emitters.

Paragraph 38, page 10:— The radiological monitoring of solid waste materials may contain very high concentrations of uranium by the process of adding "depleted uranium." Certainly this large addition of uranium material will be more hazardous to people and the environment than just disposal in a safe manner of the waste without adding more uranium in the disguise that it is "depleted" of uranium.

Paragraph 39, p. 10:— The exemptions from beta and gamma exposure limits will not be a major problem during the perfect operation of the proposed Prattville Fuel Plant, except during those times when accidents of "small" and "LARGE" (excursions) occur.

Because small masses (about five pounds of oxides and over) of U-235 and U-233 are a critical mass. This low criticality does occur when spacing, masses, and isolation barriers are inadequate. Also, generally misunderstood is the fact that huge amounts of fertile U-238 can be converted to unwanted fissile plutonium-239 to increase criticality once it is started by U-235. The gammas and betas from these "small" criticalities would indicate that workers could be exposed to unsafe ionization levels during otherwise normal operation of the plant. The "normal" or ambient air content of uranium can be determined prior to the beginning of the plant operation.

Paragraph 41, page 10:— Using the average dose-equivalents is totally inadequate, because workers and citizens become contaminated far more during the high spike of ionizing radiation than from the average of a collected mass of uranium (or other ionization) average from one sample over a period of time. Again continuing recording of ionization is essential.

Paragraphs 45, 46, 47, and 48:— These paragraphs deal with the request by Westinghouse to be exempted from certain safety codes of the Federal Regulations. These involve, respectively:— (A) Notification requirements dealing with respiratory equipment, (B) Caution signs,

(C) Waste Disposal Requirements, (D) Criticality accident requirements. The NRC and the State of Alabama should disallow these exemptions because they will pose no undue burden, but will allow the effected workers and the citizens of the area needed notice of unsafe conditions.

AUTHORITY FOR REVIEW OF STIPULATIONS

In stipulations, on page 3, paragraph 7, which states that "Nothing in this stipulation shall be deemed to prevent the petitioner (SEACA) from filing new or amended contentions upon showing of good cause as required by 10 CFR 2.714 of the Commission's regulation" unquote. Therefore, the (1) stipulations, (2) unstipulated contentions, and the (3) memorandum in support of the unstipulated contentions should be reworded in light of these comments to better reflect the real situation regarding matter for the next NRC-Westinghouse-SEACA hearing.

In mimeographed handouts by me to NRC, Westinghouse, and Mr. Julian McPhillips (SEACA attorney) I have cited on November 24, 1980, February 11, 1981, and in a questionnaire to selected specialists on December 31, 1980, concerning (1) inadequacy of the Westinghouse environmental report, (2) how do we keep river organisms from violating the Code of Federal Regulations by concentrating radionuclides to unacceptable high levels?, (3) inspectable and uninspectable portions of the proposed Westinghouse facility, (4) will final uranium-235 content be diluted by the addition of fertile isotopes, and depleted uranium? (5) Should the Department of Energy and the NRC-EPA rule that spent fuel will be reprocessed, may Westinghouse after this be allowed to use plutonium at the Prattville site?, (6) Will spent fuel and clean and dirty scrap be brought from overseas and Columbia, SC to Prattville? (7) Will Westinghouse request to reprocess uranium scrap in Prattville be allowed by NRC? (7) Will Westinghouse's request to package uranium and saleable products, finished and unfinished be permitted by NRC?, (8) Could fissile materials be processed by Westinghouse for nuclear weapons, such as neutron bomb materials in Prattville? (9) Will the final Westinghouse Environmental Impact Statement meet NEPA and OSHA requirements?

RECOMMENDATIONS

Therefore, from the above treatment, it is herewith suggested that the three parties (Westinghouse, NRC and SEACA) incorporate the above suggested changes and give new consideration to upgrading the proposed SEACA valid contentions by incorporating them as far as possible as stipulated contentions, and by changing deferred contentions for NOW considerations.

If the above suggestion is disallowed by the NRC, I would like to apply to the Atomic and Safety and Licensing Board of the NRC for leave to intervene in my own behalf. This request is made because I feel that I have been a "large" part of the SEACA's petition, but that I feel that much of my input (as suggested from the above) has been inadequately treated in the final set of stipulations, etc. Also, the regulations of the NRC does permit intervention by a person who does not establish his right to become a party to the proceeding, where the presiding officer or chairman of the Atomic Safety and Licensing Board, determines in his discretion that such a result is appropriate as in 10 CFR 2.714 (a) (1) and 2.714 (d).

Support For True Interventionship

May 8, 1981

To the U. S. Nuclear Regulatory Commission
Before the Atomic Safety and Licensing Board
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Docket No. 70-2909

In the Matter of

Application of Westinghouse Electric Corporation for a Special Nuclear Material License for the Alabama Nuclear Fuel Fabrication Plant (ANFFP) to be located near Prattville, Alabama.

Via:—Mr. Sherwin E. TURK, Counsel for NRC
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Also to all parties of the above-captioned proceeding.

From:— Louis G. WILLIAMS, Ph. D.,
Science advisor to Mr. Julian L.
McPhillips, Jr., Attorney for
The Safe Energy Alliance of
Central Alabama (SEACA)
516 South Perry Avenue
Montgomery, Alabama 36101

Louis Williams (address)
1246 Northwood Lake
NORTHPORT, Alabama 35476
Phone 205-339-1535

Reference:— NRC Staff's Answer to Petition
For Leave to Intervene Filed by
Louis G. Williams, dated 03/04/81.

and
NRC Staff answer, dated 04/20/81.

and
Letter from Williams to Mr. Bart COWAN,
attorney for Westinghouse dated on
December 3, 1980.

I regret that my untimely official "writing" to file to petition for leave to intervene (Docket No. 70-2909) was not formerly done officially much earlier. However, I hoped to resolve my obligations to SEACA as science advisor to Mr. McPhillips through normal discussions with meetings of designated personnel of NRC, SEACA and Westinghouse.

Now I feel that my mistaken and much ignored communications during informal (but official) meetings of WEC-NRC-SEACA and my mimeographed handouts have been to no avail. The discussions on October 1, 1980 and on November 6, 1981 (not November 6 and 7), in the law office of Julian McPhillips in Montgomery, Alabama was among staffs from NRC, Westinghouse, and SEACA, including lawyers and engineers and PR personnel from Westinghouse, and lawyers and engineers from the NRC. I am neither a lawyer nor engineer, but no nuclear engineer could be found to represent SEACA. I am unpaid for my services to SEACA.

I am aware that I have no official input at hearings, as SEACA's attorney (McPhillips) may or may not use my input.

On December 3, 1980, I wrote a letter to Mr. Bart COWAN, attorney for Westinghouse, regarding my dissatisfaction with the draft set of contentions and conditions arising out of the NRC-SEACA-WEC conference on November 6, 1980. At that time I was aware that the time deadline for filing for final contentions was December 15, 1980. Since then I have learned (02/25/1981, Draft Stipulations page 3, paragraph 7, that SEACA can still file new or amended contentions upon a showing of good cause in accordance with 10 CFR 2.714 of the Commission's regulations). At the time the only method that I could see would be to get the conference group to subsequently modify the draft contentions of Nov. 18 from the conference meeting of November 6, 1981.

WESTINGHOUSE ATTORNEY—Bart COWAN

Mr. Turk, attorney for NRC, has been prompt in responding to my letters to him. The NRC said we could set up phone calls long distance to work out conference problems following the meetings in Montgomery.

Westinghouse Attorney, Bart COWAN, failed to answer my letter to him of December 3, 1980. (a photocopy of this letter of 12/03/80 is being mailed to the NRC staff in Washington). Mr. Cowan, phoned SEACA attorney about my letter, but he did not answer my letter to him of 12/03/80. By the time I heard from Julian McPhillips that Cowan would not reply to my letter, I was too late to meet the suggested deadline for filing for petition to intervene for myself.

NRC-WEC-SEACA CONTENTIONS

In my opinion the stipulations that were authorized by the NRC and formed by "authorized" personnel of SEACA, WEC and NRC filed on February 25, 1981, (received by me on Feb. 28) do not represent the "conference" consensus, because they fail to include much of my "advisory" advice. This is not against the NRC regulations nor illegal, because the attorneys for NRC, WEC, and SEACA formulate the final stipulations and contentions, etc.

I have noticed that Westinghouse has flooded the TV, newspapers, and radio mass media with the advantages of the proposed Westinghouse fuel plant. So I tried to bring some "outside" pressure to support my viewpoints by using mimeographed releases to show that the contentions of the NRC-WEC-SEACA (filed 02/25/81) were unsatisfactory in helping SEACA to win its case. I still feel this way. Westinghouse has gone public to win the public and the Alabama legislature. I am unable to get the same media attention. I do not believe that the citizens of Alabama are aware of the disadvantages of the proposed Westinghouse fuel plant for Prattville.

MIMEOGRAPHED NEWS RELEASES

My releases were not covered by the media, even though I mailed them to the principal radio, TV and newsprint media. However, the NRC has made them a part of the record (I hope). My mimeographed news release of March 13, 1981 was mistakenly dated Feb. 13, 1981. However, I had cited correspondence dated March 4 and 9, 1981, which made March 13 look plausible. However, I feel that the contents of my mimeographed releases as well as my letters to conferees of the NRC-WEC-SEACA are proper, valid and significant. The wording of the contentions of February 25, 1981 tends to hurt SEACA and help Westinghouse, and there are numerous items that were discussed during conferences that haven't been included in the final draft contentions.

RECOMMENDATIONS

In my advisory capacity to attorney, Mr. McPhillips for SEACA, I can now only hope that the NRC staff will now reconsider my request that the final set of stipulations and contentions be worded to include my past conference and mimeographed input.

Please read the overside of this sheet to see how I feel some of the contentions should be overhauled.

(See overside)

Louis G. Williams
Louis G. WILLIAMS

TO NRC from SEVEN from

5.8.1986

NEED OF OVERHAUL

NRC-NEC-SEACA contentions stipulated and unstipulated, and deferred need a vast overhaul. For example:—

Attachment A begins with "2Design". My copy does not have part "1".

Paragraph 2d under design says that "...free fluorine could be formed in the equipment and could burn through the equipment or explode..." What I have said is that gaseous oxygen and gaseous hydrogen could cause explosions which could set off many kinds of unwanted chemical and atomic chain reactions, including the release of fluorine and explosives as well as set conditions for criticality excursions (not explosions).

The foot note of A* reports conferences between staff, applicant and petitioner on Oct. 7-8 and Nov. 6-7, 1980. However, there was no meeting on Nov. 7, but there was one on Nov. 6, 1981. I do not feel that adequate time was available to cover the many issues involving the "real" issues that were revealed in my various mimeographed handouts, and that they were brought up to SEACA's attorney and during the SEACA-NEC-WEC conferences.

Page 2, attachment A, paragraph 5 on HEPA filters:— I have made numerous statements that these high efficient particulate air filters (HEPA) are 99.999% effective in removing larger particulates, when working according to their design, but that one of the chief air contaminants of uranium fuel plants is uranium, whose particle size allows an aerosol of uranium to pass through the HEPA filters. The 99.999% effectiveness refers to the "larger" particulates and not to the ones that go through the pores of the HEPA filters. So, the filters are NOT 99.999% efficient. Also, HEPA filters have a bad history of leaking around the seals and when damaged, etc.

Page 3, attachment A, Paragraph 15 which deals with criticality reads of a "devastating explosion". I have repeatedly said that this would not happen from fissile materials. However, oxygen and/or hydrogen gases could begin a criticality set of conditions by changing geometry and masses of fissile materials, such as U-235, U-233 or Pu-239, to produce an excursion having devastating effects worse than any U. S. commercial nuclear power plant, because more fissile material would be on hand for fissile criticality. The atomic force would be about 25% of an atomic bomb, but the amount of deadly fallout fission materials and plutonium would be greater and more deadly than from a nuclear power plant. Heat generated would cause a large plume to spread the fallout over a wide area of Montgomery and Prattville. Westinghouse is not telling the citizens of this aspect.

Page 4, attachment A, paragraph 1, which deals with criticality deals with a dilemma, water (or high moisture) must be present, but its presence (as steam) poses many problems during the conversion of uranium hexafluoride into uranium dioxide. Paragraph (ii) does not include one of the mixed oxides, uranium-233, which is also highly fissile and both an alpha emitter and a gamma emitter. Furthermore U-234 not fissile, but it is a gamma emitter, so personnel could be exposed to unwanted gamma ionization. Three kinds of fissile isotopes would be present— U-235, U-233 and plutonium-239. These would produce far more fission products than at any present conventional nuclear power plants. Nuclear power plants are built to contain explosive conditions that are NOT in the design of the proposed Prattville plant.

Westinghouse is proposing to introduce thorium-232 to produce U-233 on irradiation in nuclear power plants this is NOT like current fuel rods.

Attachment A, paragraph 36, — Efficiency level for alpha survey equipment is all right

for many surface situations. Something must be said about alphas from uranium and plutonium isotopes that do NOT produce betas or gammas and are internal emitters, so that inhaled or swallowed particulates of them are not measured by dosimeters for measuring their ionization. Atomic workers carry uranium home with them in their lungs and digestive system, at places where there is no monitoring of them and there is no monitor that can measure them under these conditions.

OTHER GENERALIZATIONS

The chemical hazards of fluorine, fluoride, and hydrogen, oxygen and ammonia, have been completely left out.

The burial of radwastes by degrading with "depleted" uranium is misunderstood and should not be left out. This ratio of 99.3% U-238 to 0.7% U-235 that occurs in nature fails to tell everyone that adding "depleted" uranium (left over after enrichment) really adds large amounts of unwanted uranium, including U-234 and U-238, so that it adds actually more pollutional uranium to the environment, and for disposal as radwaste in Alabama.

The burial of "huge" amounts of chemically hazardous calcium fluoride in Alabama would be unwanted. Naming this "nonradioactive" would not change it from being both radioactive as well as chemically hazardous. Attachment B, Waste Safety, fail to address the real situation.

Attachment B, page 3, paragraph 8b discussing the need for the plant, does not adequately cover mixed oxides, but incorrectly introduces "use of plutonium". The proposed fuel plant would introduce thorium-232, which can become uranium-233 on irradiation in a nuclear fuel plant. The new concept would use fertile U-238 and Thorium-232.

Attachment B, page 3, dealing with radiation dose-models is very fouled up since it confuses production of plutonium from irradiation in a power plant, not in a fuel plant. Certainly Mr. Cowan knows that we thoroughly discussed this many times in our conferences. Also, during "excursions", not normal operations, fertile U-238 and thorium-232 will become fissile.

Attachment B, page 6— neutron isolation structure needs clarification to say that chemical explosions (not atomic) could trigger forces that would blow down neutron barriers, etc. or burn them. This would then allow criticality excursions.

Attachment B, page 7, (as already discussed would NOT degrade uranium; but would increase its mass and decrease its safety. Naming something nonradioactive by definition of 3.6×10^{-4} microcuries per gram is totally misleading since the mass is not considered of the total uranium, etc. Also, 50,000 kilograms of U-235 (W/o 95 to 5) is correctly formulated, but the same "is" not used when applied to uranium radwastes.

Attachment B, page 9, exemption from waste disposal requirements would mean that dosimeters and badges to protect workers from ionizations would not be available for future determination of the accumulated unwanted doses to working personnel, because they would either be unavailable or destroyed. This would destroy occupational safety. This stipulation should say "nothing" about danger of radioactivity of badges or paper records. They are NO danger. The danger is in not keeping permanent, good records of dose levels of workers..

Attachment C (Deferred contentions) all have "NO" meaning unless they can have review prior to permitting.

Louis G. Williams
Louis G. WILLIAMS
May 8, 1981

Prattville "Hot" Sewage

July 6, 1981

To:— Mr. William T. HAMASCO, Chief,
Municipal Waste Control Section
Alabama Water Improvement Commission
and

- 2) Mr. Clyde PRICE, Mayor of Prattville
- 3) Public Hearing, City of Prattville,
Prattville City Hall 7:00 pm,
July 6, 1981, concerning the
Prattville Autauga Creek Waste
Treatment facility
- 4) Permit Number ALOO26454, under the
U. S. Environmental Protection
Agency (Region 4, Atlanta) for a
National Pollutant Discharge
Elimination System (NPDES) permit.
- 5) To the Solid and Hazardous Waste
Div. of the Alabama State Department
of Public Health for the implications
for disposal of ionizing sludge from
waste treatment operations over the
State.

From:— Louis G. WILLIAMS, Ph. D.
1246 Northwood Lake
NORTHPORT, Alabama 35476
205-339-1535

Subject:— Management of Hazardous Chemical
nonradioactive wastes, and
radioactive wastes, and treatment
and disposal of materials containing
both chemical hazards and
ionizing material hazards

This is also addressed to a Public Hearing
to be held in the auditorium of the Richard
Beard Building, 1445 Federal Drive,
Montgomery Alabama, on July 9, 1981 at 7:00
p.m. This Montgomery hearing will deal
with Solid Waste Regulations for the state
of Alabama. The State Board of Public has
already issued the proposed regulations,
which are available for study at several
locations around the State.

PRATTVILLE SEWAGE TREATMENT PLANT

Apparently the above NPDES permit
from the EPA as already been issued, because
the Prattville domestic waste treatment
plant has been in operation and has been
discharging treated wastes into Autauga
Creek. The request for this permit, to the
EPA from the Alabama Water Improvement
Commission to discharge this treated waste,
must have already been granted? The
request by the Alabama Water Improvement
Commission is for plan #1. This is for
only ordinary domestic waste treatment
plan and effluent. However no date has
been given when the permit would become
effective by James W. WARR, Director of the
Alabama Water Improvement Commission, when
this NPDES was submitted to the EPA in
Atlanta.

NATURE OF PERMIT REQUEST

Apparently all is in order for this
domestic waste treatment plant to operate
like an ordinary domestic waste treatment
plant. No exceptions or modifications are
made in the permit request. There are no
exceptions or modifications for special
monitoring requirements, or for the
potential of a future Nuclear Fuel Plant
to discharge its wastewater (effluent)
into this domestic waste treatment plant.

Consequently, the public must assume
that appropriate public hearing will take
place concerning Westinghouse-like effluents
when (or if) Westinghouse reapplies for a
permit to build and operate the proposed
Nuclear Fuel Plant? The AWC should now
state its position on such a proposal.

WESTINGHOUSE WITHDRAWAL

The Westinghouse Electric Corporation
has withdrawn its request to the Nuclear
Regulatory Commission for a special
material (Uranium-232) license to build
and operate this plant near Prattville.
The citizens of Alabama, need to be told
that most of the hazardous operation of
this proposed plant would have to be
permitted by the State of Alabama and
not by NRC. The NRC is now being sued
in three cases by NOT making states more
responsible. Westinghouse may do well
for itself by waiting for the outcome of
these three suits before applying again
to the NRC for a permit to operate the
Prattville Nuclear Fuel Plant. Perhaps,
Westinghouse may wish to use a site
next time other than Prattville, such
as some place along the Ten-Tom water-
way to better serve its customers in
this country and overseas.

FUTURE PRECAUTIONS

These hearings (in Prattville on
July 6, 1981 and in Montgomery on July 9,) do
mostly with the normal operation of
waste management. More and more problems
are increasing as industrial wastes are
being added to domestic waste treatment
facilities, as could be with the Pratt-
ville domestic waste treatment plant.
Citizens need to know that domestic
secondary waste treatment plants are not
designed to treat industrial waste and
there is no know way to treat ionizing
waste to make it nonionizing.

ANSWERS NEEDED

When did or does the permit for the
Prattville Sewage treatment plant become
effective? (#ALO026454).

Would a new permit be needed should
Westinghouse wish to connect at a later
date?

Would a connection from a Westing-
house Fuel plant operation include the
safeguards against the potential dangers
from highly radioactive materials or
corrosive materials, such as fluorine
and its compounds? If the sludge for
landfill is radioactive would this be
jurisdiction of the wastewater treatment
plant or with solid and hazardous waste?

Which part of the State Department
of Public Health has jurisdiction over
ionizing wastes?

Would Westinghouse (or any other
nuclear operation, Such as Farley or
TVA) be liable for a chemical or a
radioactive spill into a domestic waste
treatment plant, or when in joint
discharge as with a paper mill?

Would the AWC allow a Westinghouse
discharge to a domestic waste treatment
plant with pretreatment? Could "by pass"
occur from the Autauga treatment plant?
Monitoring for isotopes of uranium is
very expensive. Who would pay for it?

The operation and decommissioning
of a nuclear fuel plant and a nuclear
power plant is not just another industrial
operation. Who will own and be respon-
sible for these potential future LOVE
CANALS? Could vast amounts of wastes
be "left" under any PERPETUITY arrange-
ments?

ALABAMA RESOURCES

Alabama has an abundance of high
quality surface and underground water
resources. Under the hazardous burial
grounds in Sumpter and Green counties
is a giant aquifer.

To NRC slam eight from
Louis G. Williams

Date— January 27, 1981.
Place— Public Hearing dealing with the
Management of Chemical hazardous
Wastes. Beard Building
by State Department of Health
Montgomery, Alabama, at 7:30 p.m.
From— Louis G. WILLIAMS, Ph. D.,
Emeritus Professor of Ecology
University of Alabama.
Home address:—
1246 Northwood Lake
Northport, AL 35476

The Safe Energy Alliance of Central Alabama (SEACA) is trying to win its case against the Westinghouse Electric Corporation (WEC), which is in the process of getting a license from the U^S Nuclear Regulatory Commission (NRC) to build and to operate a Nuclear Fuel Plant at Prattville, Alabama. This is U. S. NRC Docket Number 70-2909.

The State of ALABAMA must also issue permits or licenses for many of the safety and health aspects of this WEC operation. Jurisdiction for protection of citizens, atomic workers, emergency evacuation, decommissioning, and management of radioactive wastes rest with the STATE, not with the Nuclear Regulatory Commission.

S U B J E C T

Westinghouse wishes to propose that radioactive wastes for this operation be defined as any materials having more than 3.6×10^{-4} , or .00036 microcuries per gram of waste or 0.36 thousandths of a curie, per gram. Nuclear fuel with 5% enriched uranium would have 2.4 microcuries per gram of specific radioactivity from Uranium-235. Normal fuel, with 3% enriched uranium has only 1.57 microcuries per gram.

Alabama is an AGREEMENT STATE, meaning that the State of Alabama (Not NRC) may regulate what is radioactive wastes for the Westinghouse proposed nuclear fuel plant and for the Farley Nuclear Plant.

Q U E S T I O N

Westinghouse is proposing in its license application and environmental report to add depleted uranium (this is what is left after enrichment at Oak Ridge, or Portsmouth, after removing most of the U-235). However, depleted uranium is NOT depleted of uranium. It still has large quantities of U-238 and U-234. The U-234 is also enriched along with the fissile U-235. However, U-234 and U-238 are highly "unwanted". WEC is asking authority to dilute, which they call "degrade" their uranium wastes with depleted uranium to natural isotopic uranium content (0.7% of U-235), and to stabilize to solid cement form for burial as a hazardous (but non-radioactive) waste.

This dilution proposal is made on the assumption (p. 7-13 of Westinghouse Environmental Report) that the State Department of Health of Alabama agrees that the total uranium content is acceptable. The State Department needs to realize that this would mean a huge increase in total unwanted uranium, and a great increase in the amount of uranium-234.

This also means that "radwastes" from the Oak Ridge gaseous diffusion (enrichment) plant would be shipped to the proposed Prattville Fuel Plant and that it would be used to "dilute" the solid radwastes produced at the Prattville Fuel Plant to "dilute" it to isotopic uranium which is approximately 0.7% U-235.

This means that for every molecule of U-235 to be diluted about 99 would have to be brought in from Oak Ridge. However, this would NOT be natural uranium mixture, since it would contain huge amounts of unwanted U-234, and more U-238, which is also a bad alpha emitter. Both U-234 and U-238 should be considered contaminants and, therefore, additional pollution to Alabama. The citizens of Alabama do not want to solve this problem by bringing in more radwastes to be buried in Alabama.

R E P R O C E S S E D S C R A P

Westinghouse is proposing to return radwastes of uranium or "scrap" for reprocessing at Prattville from all over the world. This is a dirty chemical operation, which would only contaminate Alabama (air, water, and land) more.

Does the State Department of Health wish to label this kind of operation "NONRADIOACTIVE" so that these wastes may be buried either on the WEC site or in a state-approved chemical hazardous waste dump? If so such a dump, as at Emelle, AL, in Sumpter County would then be receiving both chemical and radioactive wastes. In addition to these unwanted uranium wastes the chemical wastes from the Westinghouse operation will include "H U G E" amounts of very chemical dangerous calcium fluoride and other chemical hazardous wastes.

The transportation of hazardous materials to and from the Prattville operation will be the Liability of the State of Alabama to manage. Occupational Health and Safety will also belong to Alabama.

Do we really want this Nuclear Fuel Plant?

Sincerely,
Louis G. Williams
Louis G. WILLIAMS

The above was a part of a public hearing in Montgomery 27, 1981.
It is presented here for hearings in Prattville and Montgomery for
hearings on July 6 and July 9, respectively for Prattville and Montgomery.

Temporary Erasure of Westinghouse Orchestration

June 12, 1981

To:— Governor Fob James and members of the Alabama Legislature, and the U. S. Nuclear Regulatory Commission, and the Safe Energy Alliances of Alabama.

From:— Louis G. WILLIAMS, Ph. D.,
1246 Northwood Lake
NORTHPORT, Alabama 35476
205-339-1535

Ref. U. S. Nuclear Regulatory Commission Docket No. 2909, in the matter of the Westinghouse Electric Corporation for a special Nuclear Material License for the Alabama Nuclear Fuel Fabrication plant (ANFFP) near Prattville, Alabama

BACKGROUND

The United Press International story in the Birmingham Post-Herald on June 12, 1981, quotes Frank Cellier, public relations expert for Westinghouse, as saying that the nuclear fuel plant for Prattville may be revived at a later date, because nuclear fuel demands are not enough at present and the near future to go on with plans for this fuel plant. All of this is too true, but other statements to the effect that this plant, as proposed by Westinghouse, would pose no radiation hazards to plant workers and area residents is preposterous.

Westinghouse as a proponent has not been fully responsible by not telling the Prattville people that doing "normal" operation nuclear fuel plants do subject the public to high radiation liabilities from hard to control materials emitting highly ionizing alpha emitters. Also, to radio and TV coverage one would think that the plant would fabricate fuel pellets only. Westinghouse has not adequately informed the citizens to be effected that both dangerous fluorine is a byproduct, which is highly corrosive to metals and lungs, and that the nuclear industry has not been able to safely contain uranium aerosols, etc.

DELAYING TACTICS

The decision of Westinghouse to delay building this nuclear fuel plant is a ploy to kill all of the extensive scientific information that Westinghouse has been covering up during my investigations as a science advisor to Mr. Julian McPhillips, attorney for the Safe Energy Alliance of Central Alabama (SEACA). I have conferred extensively with attorneys and engineers of Westinghouse, NRC and SEACA during special conferences and at a prehearing, but my input has apparently gone unheeded.

DILEMMAS

On Sunday, May 3, 1981, I presented the dilemmas at the annual meeting of the Alabama State Energy Alliance in Birmingham. At my suggestion this group the previous year had gone on record against the proposed fuel plant. The minutes of the May 3 meeting clearly show that the Safe Energy Alliance of Alabama by a resolution moved and passed, supports my work to stop the opening and operation of the Prattville Fuel Fabrication facility. However, some members do not like my strong support of the clean use of coal, and being too weak on more use of solar energy, and in being for energy from fission (not fission). I have always experienced trouble (as now) in trying to communicate to all groups and the general public (especially the media) since the issues are far too complex for the average person to comprehend, and to try to uncover the Westinghouse clout. However, I welcome a fair debate with any of the Westinghouse representatives.

BREAKING SECRECY

On May 8, 1981, I released a lengthy mimeographed report to all parties of this NRC hearing. Copies were distributed to the news media, but none choose to use it. Any hearing on my valid contentions against this fuel plant would have brought out the real issues for the people of Alabama, who are much uninformed. Westinghouse hopes to clear this docket, get me dumped and begin a new slate, so now orchestrated that the NRC will approve the proposed different kind of nuclear fuel plant.

Westinghouse would rather win by the public relations route rather than by genuine hearings that discuss the real issues. For instance the people of Prattville have been led to believe that its nuclear fuel plant near Columbia, S. C., is a fine, clean operation and that the proposed plant for Prattville would be more of the same. My limited studies of its Columbia operation did not show it to be clean and safe, especially with management of chemical and radioactive wastes. Of course the proposed operation for Prattville is new and very different from its operation in Columbia.

I have repeatedly reported that the citizens of Prattville-Montgomery, in particular, and the people of Alabama, in general, would not have this nuclear fuel plant if they were allowed to be rightly informed. I have never understood why the press has refused to give my side. Many proponents only talk about the benefits of nuclear energy, and many opponents only talk against nuclear energy in terms that are general. Neither actually discuss the proposed Prattville Fuel Plant. I am sure that many responsible and reputable scientists are on my side, and that the Union of Concerned Scientists does support my facts and my position.

EXECUTIVE AND LEGISLATIVE RESPONSIBILITY

Westinghouse is taking attention away from this proposed fuel plant at this time, while the Alabama legislature and the governor make up the legal state role in the managing of large amounts of very hazardous chemical wastes and the contamination from very dangerous, radioactive wastes. The question of safety, such as the chance of an atomic excursion with high fallout of fission products, have not been revealed to the public. The kind of fuel rods would produce more energy from fissile materials NOT used in current nuclear power plants. These new fuel rods would not only contain higher concentrations of U-235, but would also contain thorium-232, which becomes fissile U-233 when irradiated in a nuclear reactor. Also, more plutonium would result on irradiation in a nuclear reactor because "depleted" uranium containing U-232 and U-233, U-234, U-235 and plutonium would be much greater problems of radwaste management from both fuel plant and reactors.

INTRODUCTION OF MIXED OXIDES

Westinghouse wants to use its experience with mixed oxides in Prattville that were developed at its plant in Pennsylvania. Westinghouse would like to reprocess uranium scrap and perhaps spent fuel in Prattville. Wherever this has been tried huge ionizing pollution has occurred, as the now closed West Valley, N. Y., fuel reprocessing plant, now a big liability to the state of New York, and the NRC. Westinghouse would serve its many overseas reactors from Prattville, which would mean too much spent fuel for Prattville reprocessing, etc.

From Louis G. Williams
NRC item nine 2-8-82

(Continued on overside of this sheet)

PUBLIC HEARING DEMOCRACY

Much more has been discussed between me and lawyers and attorneys from Westinghouse, NRC and SEACA during conferences and via mail and long distance phone calls. However, I feel that too much has been withheld from the citizens, who would be mostly affected.

ROLE AS SCIENCE ADVISOR

I have been science advisor to SEACA's attorney, Mr. Julian McPhillips, since the inception of the first public hearing, held in the Court House in Montgomery on August 5, 1980, however, I did not see a copy of the Westinghouse License application until I got an incomplete copy on September 4, 1980, which was after the first prehearing conference of August 5, 1980.

STATE PUBLIC HEARINGS

The Alabama Water Improvement Commission will hold a public Hearing in the court room, city hall, Prattville, on July 6, 1981, beginning at 7:00 p.m., concerning the possible connection of the proposed Nuclear Fuel plant to the Prattville domestic waste treatment plant on Autauga Creek. The public should be told that there is no valid reason for this connection, which could pose a contamination threat from both ionizing laundry wastes and chemical hazardous wastes and the chance of deliberate dumping. Domestic waste treatment plants cannot treat radwastes in laundry wastewater. There will be large amounts of laundry wastes contaminated with radionuclides. Much of the contamination would be from uranium (alpha emitters) which are difficult to monitor and very expensive. This should not be an expense or liability of the Prattville sewage treatment plant.

FINAL ENVIRONMENTAL IMPACT STATEMENT

The final Environmental Impact Statement has not been issued yet by Westinghouse, but it was expected to be out when Westinghouse decided to postpone its application for a license from the NRC. However, Westinghouse did issue an environmental report in December 1979, which clearly indicates that Westinghouse plans an unorthodox operation at Prattville.

The Alabama State Department of Health, including the Department of Radiological Health, and the Dept. of solid and hazardous waste, have not taken a position on the proposed Prattville fuel plant, saying that it is waiting for the final Westinghouse Environmental Impact Statement. However, there are many serious decisions about chemical hazardous wastes, and ionizing wastes that are state responsibilities, which could help or hurt Westinghouse prior to its new or next application to the NRC for an operating license. These do involve numerous safety factors and liabilities to the State, which, in my opinion really belong to Westinghouse.

This temporary withdrawal from the NRC proceeding should be judge as a tactic by Westinghouse to get what it wants from Prattville and the state before applying for another license application. Also, Westinghouse may be waiting for the new and less stringent regulations of the new administration in Washington. Therefore, the real Safe Energy Alliance should now come to the front to take a sound position. Unfortunately, only citizens of 50-mile radius of Prattville may be ruled eligible as a party to the state and federal hearings. This would tend to rule out my input, since I live in Northport, Alabama.

WILL THE FEDERAL ADMINISTRATION NOW

reinstitute the reprocessing of spent nuclear fuel and high-level wastes from weapons development? This has been a very expensive process and highly contaminating to recover uranium and plutonium. A very real possibility of concern would be the co-location of a fuel reprocessing plant at the proposed fuel fabrication plant for Prattville.

Administrative Federal Policy

There is a functional policy of the NRC to locate hazardous nuclear facilities away from densely populated areas. This raises a constitutional question as to whether you have rights because you are not in population dense area. The Prattville area, by this standard, is low population density. If this should occur the Alabama River, as well as Mobile Bay, would receive dangerous contamination of radwastes, unwanted heavy metals, and hazardous chemical wastes. Sickness from ionization is often not obvious until too late and difficult to trace back to origin. This is true for cancers, birth defects, and permanent genetic defects. What does Westinghouse plan to do to assure workers and citizens years later when these defects show up?

FAIR NEWS COVERAGE

The following letter was mailed to Mr. Norman Ridenhour, publisher of the Prattville Progress on May 16, 1981, with a request for its publication in the "letters" section. Quote, "Several newspapers in Alabama carried reports that the Safe Energy Alliance of Central Alabama (SEACA) has submitted 81 reasons to the Nuclear Regulatory Commission why the Westinghouse Electric Corporation should not build a nuclear fuel plant in Prattville. Actually the final set of stipulated contentions, filed on February 25, 1981, has only 13, not 85. Many contentions have been deleted by a conference between Westinghouse and the Nuclear Regulatory Commission. These final 13 are either very weakly composed, or are of less consequence than many of the others that were not accepted by a conference of attorneys for Westinghouse, SEACA, and the Nuclear Regulatory Commission. As science advisor to SEACA's attorney (NRC, SEACA and WEC), as well as to engineers representing Westinghouse and the Nuclear Regulatory Commission, during official meetings with them to thrash out a set of good contentions.

Actually the final 13 are less important than another set of 27 from SEACA that were denied for admission as not proper issues for the Nuclear Regulatory Commission proceeding by either Westinghouse or the NRC. Some of the more important SEACA contentions against the proposed Westinghouse nuclear plant have been deferred by the Nuclear Regulatory Commission until Westinghouse files what it intends to do about them. However, the NRC will be allowed to issue a license permit to Westinghouse to build and operate this nuclear fuel plant without debating them during the licensing proceeding. Some of these deferred contentions deal with the most critical issues to citizens of Prattville. These have to do with liabilities, with authority given to the state of Alabama by the NRC, which are either economically infeasible or hazardous for citizens of Alabama. How many citizens are aware that issues such as occupational safety and burial of radioactive wastes or hazardous chemical waste are state jurisdictions?" unquote.

After about 30 years of dealing with the old AEC and the NRC and various industrial polluters I have decided that there is no way to win this case against Westinghouse. At the present time the score is about 140 for fission problems to zero for protection from them. Until there is a bad accident (not TMI, Browns Ferry or Love Canal) where the corpses can be counted, will demands for protection take place. If the reactor at Baghdad, Iraq, had been loaded with nuclear fuel the whole city would now be uninhabitable. This could happen at Prattville.

Louis G. Williams

Acceptable Risks Values Your Decision-Making NRC Regulatory Hearings Your Stewardship of Wisdom!

The licensing of industrial factories to handle nuclear energy materials, both atomic fissile fuel materials, and their radioactive ionizing wastes is a process now of ratios of cost/benefit analysis, according to the promoters and the regulators. The whole communication problem of nuclear technology is now a kind of jargon, or rhetoric, or clout. As an outsider I now see that public safety has been shifted as a liability to the taxpayer via the federal government and each state government. US NRC Docket No. 70-2909

WESTINGHOUSE NUCLEAR FUEL PLANT

The Westinghouse Electric Corporation of Pittsburgh is now in the process getting a license from the Nuclear Regulatory Commission (NRC) to build and to operate a Nuclear Fuel Plant in Alabama in the Prattville-Montgomery area.

The purpose of this is to try to relate to responsible citizens (especially of Alabama) some of the communications and hearing problems in handling rather than being handled in this kind of decision-making. I do not believe that knowledgeable citizens of Alabama can afford to allow Westinghouse to orchestrate the legislature and the special interests into State licensing of this nuclear fuel plant without proper safe guards. I believe the people of Alabama will turn down this proposed plant if given a chance after they are informed about nuclear fuel plants.

REGULATORY RHETORIC

There is much rhetoric that I do not comprehend like that from experienced nuclear fuel engineers and attorneys, from both the NRC as well as Westinghouse, but with Westinghouse being more dominant. Even my years as a professional career ecologist for the federal government has not trained me for the ritualized rhetoric of the experienced nuclear fuel engineers and attorneys of both the Westinghouse Electric Corporation (WEC) and the NRC. As a trained ecologist I am experiencing frustration trying to help the Safe Energy Alliance of Central Alabama (SEACA). My services are free. SEACA's attorney, who is a good lawyer, but untrained in science and technology frequently changes my advice, perhaps unknowingly, as he only can officially draw up the official contentions and speak during NRC hearings. Therefore please do not be unhappily surprised in this my presentation of SEACA's position because I "have" to be shaped by the regulatory codes and jargon.

SEACA'S NO CONTENTIONS

There are unknowns:—(1) there are inspectable and uninspectable portions of the proposed WEC facility. (2) We do not know anything about their new "Dry" chemical process and the kiln (furnace) in which it will take place. WEC says these are now proprietary (or secret). Will its walls be able to withstand fluorine corrosive fires, and hydrogen explosions? Will toxic heavy metals from its construction pollute the Alabama River? (3) Will the hazardous materials meet the EPA and the Resource, Conservation and Recovery ACT, which became implemented on Nov. 19, 1980? Or will the NRC and the WEC be exempted? (4) When will the state of Alabama take a position on all of the liabilities proposed for the State by the WEC fuel plant? (5) The definition of low-level radwastes by WEC is absurd. WEC states "that radioactive materials greater than 3.6×10^{-4} microcuries per gram" are not low-level. And after isotopic dilution

From:— Louis G. WILLIAMS, Ph. D.
Emeritus Professor of Biology
Aquatic Ecologist and authority
on the concentration of radionuclides
in food webs. P. O. Box 1927
UNIVERSITY, Alabama 35486

Home address:—
1246 Northwood Lake
Northport, Alabama 35476
November 24, 1980.

All isotopes of plutonium, uranium, and thorium are radioactive and produce unwanted alpha particles, which wreck biomasses they get into. If WEC is trying to say that fissile isotopes will be diluted prior to land burial on site, these would be U-235, U-233, & Pu-239, but nonfissile U-238 is an alpha emitter and in the highest concentration. Uranium-234 isn't fissile but it is a very hazardous strong alpha emitter that is brought in to WEC in high concentration during U-235 enrichment to w/o 5% U-235.

(6) In section S-8 of the license application reports that source material, such as Uranium hexafluoride (UF₆) and products will be regulated by the State of Alabama. Does this NOT remove the NRC, EPA (RCRA) and the DOT from their lawful regulation? Can the citizens of Alabama trust the state of Alabama to promulgate safe rules, and heavy penalties for violators. Won't this given regulation to Alabama add expenses and more taxes?

(7) We still do not have enough information concerning how the request to have on hand 50,000 kg of U-235 (w/o 95 to 5) will be safely distributed to prevent criticalities at the WEC proposed facility. How much at any one time will be:—
(a) in steel cylinders as UF₆? b) How much as powdered uranium oxides? c) How much as mixed oxides, d) How much as pellets, e) How much, if any, will be Thorium-232? f) Will the ²³⁵UO₂ powder be diluted with depleted U-238? (This would greatly increase the amount of fissile materials in the reactors). g) Will the ²³⁵UO₂ w/o @ 5% be diluted with natural U-238 (with little U-234)? h) Will powdered uranium oxides be only of oxides of U-235 w/o 05%?

In section S-9, dealing with the conversion of UF₆ to uranium oxides, the license application calls for "other compounds" into the uranium compounds. Are these pelitory sintering materials or a) thorium-232 fertile for U-233, or b) U-238 fertile for Pu-239?

In section S-10, dealing with the recovery of "off site" generated scrap, clean and dirty, does this include radwastes from WEC's nuclear fuel plant in Columbia, SC and from Scraps around the world at WEC nuclear plants? If so this recovery of uranium (perhaps later Pu) involves the Nitric acid dissolution, which is a large increase in both radpollution and chemical pollution of the Alabama River at the Prattville WEC plant. This should be denied.

(Continued on the reverse side of this sheet)

Also, Section S-10 requests authorization to degrade w/o U-235 to the natural isotopic ratio or to depleted isotopic uranium ratio, prior to disposal, perhaps on WEC site. This effect would be to decrease the proportion of the ratio of uranium-234 and to increase the total amount of disposal of all isotopes of uranium. Hazardous uranium-234 is a stronger, more energetic, alpha emitter than U-238. All uranium isotopes emit alphas, which are from 10 to 20 times more dangerous to the biosphere (sometimes 1000 times more concentrated) than betas or gammas when inhaled or swallowed or get on the skin. A nuclear fuel plant at Jonesboro, Tennessee caused a 95% increase in the incidence of cancer before it was closed down. At Irwin, Tennessee another uranium fuel plant lost a huge amount of uranium. It was either stolen or lost to the environment.

SECURITY PROBLEMS

Uranium and plutonium are hard to accurately measure. They have long half lives. They tend to deliver large doses to the lung, where they respectively cause lung cancer and after being brought up from the lung are swallowed to pass via the gut to go to the bones causing leukemia and bone cancer. After affecting the organisms of the Alabama River uranium isotopes will tend to accumulate in the sediments of the Mobile-Bay Estuary, where the seafood industry would be threatened. Who wants to eat shrimp, oysters or fish containing alpha-emitting uranium?

The packaging of uranium and saleable products (finished and semifinished) indicates that the WEC Prattville plant would produce fuel or ingredients for uses other than pellets for conventional nuclear power reactors, perhaps for atomic weapons. The high enrichment of fissile material could be used to make high neutron flux, like in a neutron bomb. Does WEC plan to produce more than uranium for pellets or pellets at this Prattville plant?

S-37 discusses homogeneous and heterogeneous oxides for criticality control at the maximum 5% enrichment of U-235. Just what material and how much will be used for this control. Will substances like neutron absorbers borate be used? Will thorium-232 be used? Depleted uranium? How much of the oxide powders are other than UO₂? Will fertile isotopes be used to produce more fissile isotopes after irradiation in the nuclear reactors or in case of criticality?

S-16 4-1. 4.1 Dealing with regulatory compliance (presumably NRC) of radioactive materials to unrestricted areas requests standards as low as reasonably achievable (ALARA) and a large portion of this license application (S-73 to S-76) requests numerous exceptions from safety regulations, which, if granted, would GREATLY increase dangers to plant workers and the people of the Prattville-Montgomery area. Injury and property damage for these exemptions would NOT be to either NRC nor WEC, but to YOU! I would think that the mayors of both Prattville and Montgomery would want to look into these risks. What kind of quality assurance (or insurance) is WEC providing that too large risks are not involved to private citizens? Will safety be monitored for the many ALARA exemptions by the state of Alabama Department of Health. Will the Health Department have "trained" personnel and funds to do this? Will this be at the taxpayers expense? My portion of the WEC license application does not address proof by demonstrations, such as a) safety analysis, b) Who will provide the licensing--NRC, Alabama, EPA, DOT, RCRA etc? These include responsibility for accidents along the highways involving hazardous material (chemical and radioactive) coming to and going from this WEC plant. c) Regulatory compliance manual, d) Accounting plan for nuclear materials control (to prevent stealing of material to make terrorist bombs), e) Comprehensive physical security plan, f) emergency and (g) Final decommissioning plan ???!

WHAT CAN YOU DO?

If you do not like the prospects of this kind of fuel plant operating in Alabama you can get in touch with the NUCLEAR ACTIVITIES COMMITTEE, a joint-Interim Committee of the State Legislature. This committee exists to protect the health and safety of the citizens of Alabama. My opinion of this committee, as of now, is that it has only listened to the proponents of the WEC plant and nuclear power in general. This committee is chaired by Ann Bedsole, 25 Edgefield Road, Mobile, AL 36608.

The WEC plant must be licensed by the State of Alabama before NRC, DOT, EPA, etc., will allow its operation.

S-3 Allows the license to be amended in the future by the Nuclear Regulatory Commission "prior" to implementation. Can the citizens of Alabama be assured (insured?) that these changes will be in their best interests?

S-4 Defines a licensed waste disposal facility for radwastes by the NRC as both on site (the Prattville site) and off site (now at Barnwell, S. C. for this area). However, other states do not want radwastes from Alabama (including Barnwell which is becoming more and more restrictive). Right now the Alabama Joint Committee is looking into prospects of the State providing a low-level radwaste site in Alabama, to handle radioactive, low-level wastes from such operations as the Farley Nuclear Plant. Heavy-level wastes are "stored in water" at reactor sites. There is presently no known safe disposal for them. Farley's wastes are mostly "intermediate-level," while hospital wastes are really "low" level. The NRC will push for the approval of a rad waste dump for a region of southern states, where Alabama may be number ONE!

Georgia has repeatedly turned down both radwaste and hazardous chemical waste disposal sites. Are we in Alabama smarter? We already have one of the most hazardous chemical wastes dumps for the Eastern United States at Emelle, in Sumpter County. It is the only EPA-approved PCB dump in the Eastern U. S.

CRITICALITY PROTECTION

S-4. The maximum permissible limit value (MPLV) is defined by WEC as a value which has been "ESTABLISHED" to assure nuclear criticality safety under all "FORESEEABLE" conditions, including a maximum credible accident. I contend that Browns Ferry and Three Mile Island were also thought "established, foreseeable and incredible" but Murphey's Law was upheld and these accidents are history, despite assurances (without insurance). Criticality safety is based on single contingency, while nuclear fuel plants operate on "double contingency" hopes.

The WEC (1979) environmental report (not an impact statement) addresses many of the real risks for the operation of this nuclear facility, but in my judgment, tends to minimize their chances for human, other biotic and property damage. The major risks are to the state to "pay off" when bad risks become realities. According to the National Environmental Policy Act (NEPA) the people must be informed about the requirements for sheltering and evacuation and dangers of possible catastrophic proportions, including normal operation which will produce a steady low-level radwaste with accumulation in time to cause cancers, birth defects, and irreversible hereditary effects. WEC has this application on file at the Prattville Public Library for you to read for yourself (provided you are a nuclear engineer)!

Hazardous Waste Management Except Nuclear Waste

HOW ENVIRONMENTAL REGULATIONS ARE MADE

The proposed regulations-- (Fiscal year 1983, RCRA/EPA grant for the state of Alabama for maintenance of regulations, and the proposed management of hazardous waste budget from Alabama on EPA form 5700-33) are the subjects of this statement to a public hearing in Montgomery, Alabama on 30 September 1982. (See ADPH-P-SW-1/Rev. 8/82)

In summation, the federal government would fund \$1,673,054.00; while private, state and non-federal sources would contribute \$591,725.00 for fiscal year 1983. These funds would pay for the administration of state programs of the newly-formed Alabama (1) Department of Environmental Management, (2) Compliance and enforcement activities, (3) evaluation of off-site commercial waste incineration plant, and (4) evaluation of waste storage and disposal permit facility, etc.

The following comments on the general Public Hearing Democracy Hearing at the Richard Beard Building, Montgomery, AL at 1:00 pm on September 30, 1982 and for any person interested in how public hearing democracy does or does not function.

ATTENTION OF:-- (1) State Board of Public Health, Division of Solid and Hazardous Waste, 434 Monroe Street, Montgomery, AL, and (2) Attorney Keith Casto, regional council, EPA Region Four, 345 Courtland St., Atlanta, GA 30365; (3) Newly-formed Alabama Department of Environmental Management, which consolidates many departments under this single umbrella for one-stop permitting.

IMPLICATIONS OF THIS HEARING

The proposed regulations could have the effect of undercutting proper debate on cost effectiveness and safety of storage, disposal and transportation of hazardous waste and radioactive waste. (This hearing excludes discussion of more toxic waste, and radioactive wastes). Separate regulations govern the management of toxic waste, and high-level radwaste. Intermediate-level radwastes, with high level of ionization are now lumped with low level radwaste. Most intermediate and high-level wastes contain toxic metals, which are toxic and often also hazardous, but these radwastes will be the subjects of future regulations to be promulgated after the federal government finally decides on a policy for the disposal of heavy-level radwaste. About 2,000 tons of highly radioactive spent fuel has been accumulating each year at nuclear plants. The Atomic Energy Commission in 1970 began putting wastes in drilled holes at the Savannah River plant that makes plutonium for bombs. This was discontinued, because geologists feared the Tuscaloosa Aquifer, which supplies much of the drinking water for Georgia, would be destroyed as a source of drinking water. Studies show that the incidence of cancer is now high in this area. This project Bedrock is now being revived by first putting the radwastes in canisters so that some radioactive decay can occur, corrosion allows the canisters to leak into the aquifer. In Alabama in the Black Belt Counties, especially at Emelle, the EPA-approved toxic waste dumpsite may be a future Love Canal, but insurance rather assurance is needed to prevent contamination of this part of the giant Tuscaloosa Aquifer. Currently suggested surety bonding would not cover damage or would they be available for future generations, who will be out of water safe to drink or use in agriculture, etc.

This generation does not have a right to contaminate future generations. More studies need to be made for destroying the hazardous and toxic wastes where they are generated in a cost effective way.

September 30, 1982

From:-- Louis G. WILLIAMS, Ph. D.,
Emeritus Professor of Ecology
at the University of Alabama
and Science advisor for the
Safe Energy Alliance of Alabama
Home address:-- 1246 Northwood Lake
Northport, Alabama 35476
Home phone 205-339-1535
University 205-348-5960

TEAM SPECIALITY ASSOCIATES

Some high technology engineers and attorneys associated with special chemical and nuclear industries could have orchestrated or perhaps connived to produce these set of regulations on the management of hazardous wastes. These regulations apply nation-wide, but allow for some modification, additions or deletions for each state by agreement with regional councils (for us region 4).

The United States is divided into regions and compacts for waste management. This arrangement could allow Alabama to be judged "best" for receiving treating, storing, disposing and transporting unwanted wastes, without adequate insurance or real bonding for covering potential future Love Canals or Three Mile Island-like catastrophes. The proponents of these set of regulations promise safety standards that give assurance (not insurance).

To support these claims, please read examples and specifics (on reverse side of this sheet) showing how some of these regulations could be bad for your health and your economic welfare in Alabama. For example no one was really listening in the '60's and '70's when I made statements at AEC and NRC and Alabama Power Company public hearings saying that the generation of electricity by the fission route was neither cost effective nor safe. Now we know. But who is going to pay for it?

CONSULTANT SERVICE AND VALUE JUDGMENT

Consulting services from hazardous waste managers and from regulatory services are sometimes (perhaps unknowingly) a part of the problem as they tend to give allegiance with the special interests which are highly organized, while the advocates of environmental protection are frequently diffused and under organized, with infiltrators who manage to put monkey wrenches in efforts to handle issues in the welfare of the general public.

SECRECY AND RULE-MAKING

The greatest danger today is the growing secrecy (hiding, concealing and misleading) especially where the regulators are being pushed by special interest for the promulgation of rules that violate the right of innocent people to their health and liberty and for the protection of the genetic code (DNA) from which the whole ecosystem (human life support system) including the overdomination by people for reducing their own survival.

These proposed regulations do not address many of the higher priority problems. They could allow sweeping authority which may not be in the best interest for the people of Alabama--the beautiful, where an abundance of natural resources is the bright area of our future. We can use a lot of high technology (genetic engineering, space engineering, etc.), but high tech for toxic, hazardous and ionizing wastes storage and disposal may turn out to be our nemesis. People cause these kinds of pollution and the right people can stop these kinds of polluters.

(MORE CONTINUED ON THE REVERSE SIDE).

To NRC - item cleared from Louis G. Williams, Feb. 8, 1986

These set of regulations might deal adequately for small generators, but we are also dealing with large power-influence corporations such as Westinghouse, GE, DuPont, etc. Many large corporations have activities which extend around the world, and have influence in conniving the orchestration of sets of rules, such as these for the environmental management of hazardous waste. By state agreement or by interpretation big companies could monitor their own operation, store or bury on site hazardous wastes and latter have no liability following closure according to these regulations.

NATIONALLY-APPLIED STANDARDS WITH LIMITED MODIFICATIONS BY AGREEMENT WITH EACH STATE

These set of regulations are almost identical to those used by RCRA/EPA for other states in other regions by states in regional compacts. However, each state has a given right to chose its own rules to be either more or less restrictive by agreement with the regional office, which for us is region 4 in Atlanta.

Before these regulations are allowed to be adopted by Alabama many implications need to be better understood by the average citizen. The media, over the years, have had a communication's problem, so that the people have not really understood the real future dangers and hidden costs. Delegating public understanding, as done by special interests and their engineers and lawyers will probably be hazardous to our health and our pocketbooks, but somehow we must communicate and be involved through public participation, as exemplified as this public hearing. In recent years public hearings have been poorly attended with little interest. Several times I have been the sole partisapant in state hearings. Much is at stake in these hearings. Time is running out rapidly for us if we don't want to get locked into this kind of a set hazardous waste regulations.

COMPATIBLE HIGH TECHNOLOGY

Industry is now investing heavily and at an increasing rate in new, high technology that often produces by-products that have never been an intimate part of the environment of the earth's biota, especially for humans. This industrial development and parallel government regulation should be to assure (real effective bonding for now and generations to come) that this spending and growth will support a healthy human population. More compacts should be made between government and business and research scientists for the kind of regulations that will support holistic (all things considered) for the future well being and real understanding by average citizens on how to best plan our future and the future for generations to come.

On May 19, 1982, the State Committee on Public Health adopted certain revisions to the Alabama Hazardous Waste Management regulations. Therefore suspending enforcement of section 4-250.01 until after comments can be received. This would require at least two weeks prior to any shipment of hazardous waste, etc.

Exemptions for the State of Alabama and the Federal government are a part of 4-255.15(c), (d), of these regulations. I presume that the state and federal government, such as TVA and EPA, etc., will be involved in closure costs. Surely arrangements should be made where the State and/or federal government could not inherit dumps and catastrophes in the future that are not now anticipated. Will adequate funding be available to pay for legitimate claims. How will the state or federal procure funds to cover costs for its inherited bad closures, etc.?

How will the State collect for clean up when closure cost exceed the amount paid into the various trust funds? At present there is no known way to clean up the Tuscaloosa aquifer when once contaminated by a large leak.

PRINCIPAL HEARING SUBJECTS

The Division of solid and hazardous waste of the Alabama Department of Public Health has proposed changes and amendment to the Hazardous Waste Management Regulations adopted by the State Board of Health (ADPH-SW-4/Rev. 8/82) dealing mostly with financial and liability regulations which have been adopted by EPA. Some EPA pressure is being applied because the State may not apply for funds for Phase II interim authorization. The State is requesting from EPA again that the generators of hazardous waste should give prenotification prior to the generation and shipment to storage or burial sites.

These statements and oral comments at the hearing in Montgomery on September 30, 1982, are to be a part of the record.

However, there are sections of this agreement document between EPA and the State that are too complex legal treatments allowing many possible loop holes that will be in the jurisdiction of Alabama law that could put the health-safety and financial burdens on the citizens of Alabama rather than the person, company, or corporation causing the liability. The agreement (Section 4, page 44) dealing with closure or post-closure of a hazardous facility or dumpsite is inadequate to cover costs and citizen liability after the "polluter" has closed the books with the State or federal government.

Section 5, page 44 says that payments made to the Trustee for the Fund shall consist of cash or securities acceptable to the trustee. What if the securities are bad? Section 6, page 44 allows all payments from grantors to be a part of one general fund which covers all of the fund users. This could result in small operators paying for the large operators' liabilities, etc. Section 7, page 44 gives the trustee authority to transfer assets of the fund "to any commingled or collective trust fund," this could be dangerous for the private citizen and the State, because value judgments and ethics would be involved. Likewise Section 8, page 8 gives considerably too much power to trustee to deal with documents, sell, exchange, transfer, etc. Section 8 with parts a, b, c, d, and e give too much freedom of operation. Section 9, 10, 11, 12, and 13 on page 46 should come under regulations similar to a federal bank or savings and loan association.

Section 16, p. 47 allows an amendment to agreement or contract between grantor and trustee and Board. This could be satisfactory when the contribution to the fund is going up with the risks, but not the reverse. The immunity and indemnification is too strong in the protection of the administration of this trust fund.

Page 48 Section 19 states that the agreement shall be construed and enforced by the State of Alabama by laws. There are a number of "bad" laws now on the books and constitutional changes that could make these agreements in singular or plural very bad risks for the public. Time will be required to change the present laws and "bad" future laws may be enacted. The proposed amendment to Section 4-255.13(c) allows "only" 180 days before the date the owner-operator will close. For large potential operators at least a year or two notice should be required.

The proposed amendments of notice to owner/operator and the public by newspaper notice opens the door "after the fact" where the public could be caught for damages from unsafe operations. Why have regulations that can be changed at the time of closure to the benefit of the owner/operator who is responsible and liable for the bad act?

The engineer-lawyer-board relationships are far too complex for the average lay citizen, and compliance wording is This could be a lawyer BONANZA!

ALABAMA WASTES MANAGEMENT BONANZA

LEGISLATIVE RESPONSIBILITY

Led step by step the Alabama Legislature is passing laws that are allowing a take-over of the State by powerful special interests that seem to insure that Alabama will be number one in dealing with toxic, hazardous and several levels of radioactive wastes.

During the 1982 regular session of the Alabama Legislature a bill passed into law called the Southeast Interstate Low-Level Radioactive Waste Compact. The "Low Level" terminology is highly misleading, because "waste," as used in this law, intends to mean radioactive (or ionizing) waste that is not classified as high-level, transuranics, nor used nuclear fuel. "By-Product" material AS DEFINED IN Section 11e.(2) of the Atomic Energy Act of 1954 is also included as radwaste. This compact of Southeastern States does allow corporations, such as Westinghouse and General Electric to operate factories for the federal government which manufacture nuclear fuel rods for electric nuclear power plants, and for use in atomic submarines, or for the production of nuclear weapons in several states.

GARNERING FISSILE MATERIALS

Reprocessing of used nuclear fuel may (probably will) occur in Alabama. Conversion of nonfissile uranium-238 to fissile plutonium-239 can occur in Alabama. The mixture of fissile uranium-235, fertile thorium-232 to become fissile uranium-233, and fertile uranium-238 to become fissile plutonium-239 could make a far more cost-effective nuclear fuel for use in current nuclear power reactors. I am aware that this is high-powered technology, but none the less very necessary for the legislature to "QUICKLY" learn about, so that we in Alabama will not become victimized by rapid changes in our nuclear age.

THREE KINDS OF WASTE MATERIALS

1) toxic wastes (heavy metals, and pesticide-like organic compounds);
2) chemically hazardous wastes, and
3) several levels of ionizing materials or radioactive materials. In each step of the nuclear fuel cycle or in atomic weapons development "huge" quantities of chemically hazardous wastes are generated.

The point that I am trying to make is that all of us in Alabama must try to understand the quantities and the potency of waste management problems in Alabama.

VALUED CHALK FORMATIONS

Many industries are anxious to get rid of their dangerous, unwanted chemical and radioactive byproducts by easy burial in chalk deposits of the Black Belt Counties. Clearly outside special interests have been orchestrating much that the legislature has, and is now making lawful. For example, three times I wrote for permission and got written permission to attend and to present my position against "how" the Southeast, Low-Level Radwaste Compact was formulated to almost insure that we would be IT for all of the States of the Southeast and for other states that want to come in. I sat through three such interim committee meetings in Montgomery but I was never allowed to give my testimony. I was unable to attend a hastily-called "so-called" public hearing, when Westinghouse send down from Pittsburgh their expert nuclear engineer. However, I did debate him on state-wide Public TV (For the Record) on making Nuclear fuel about a year earlier.

From:— Louis G. WILLIAMS,
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February 24, 1984

Mr. John W. Pemberton, clerk of the House, wrote letters to then-acting president of the University of Alabama, Dr. Howard B. Gundy, which incorrectly charged that my activities in Montgomery were disruptive and that they would not be tolerated. Pemberton also requested that the University should look into my state retirement benefits.

I was never granted time to present my position to the Nuclear Activities Committee then chaired by Representative Ann Bedsole of Mobile. She is now senator Bedsole. However, I did prepare a number of newsletters which tried to present the disadvantages to Alabama of the orchestration of radwastes management by the special interests.

NATION-WIDE APPLICATION

How many people of Alabama are aware that the federal regulations (EPA, OSHA, DOE, NRC, DOT and DOD) apply nation-wide, but they especially impact Alabama because we have the "BEST" disposal sites, the best waterways, the best highways, an easy-to-persuade human population, a low population density to accept risks from chem or radwastes, the best financial (most cost-effective) situations and a state among the weakest of the legislatures. The congress of the United States has passed public law 96-573, which encourages state waste compacts, however, being best in the Southeast Compact tends to give Alabama most of the BAD impact. We are rapidly becoming more and more and more like New Jersey.

Somehow the mass media of Alabama has failed to really inform the voting public that our neighboring states will not allow all of these unwanted chem and radwastes in their states.

Highly polluting nuclear facilities are being phased out in Tennessee, South Carolina and Georgia, while at the same time polluting facilities are on the build in Alabama. Some of the federal operations at Oak Ridge, and Ervin, Tennessee and at Aiken, South Carolina could be headed for Alabama.

THE ATOMIC ENERGY ACT OF 1954

has encouraged Alabama to become the world's highest concentration for industries dealing with unwanted toxic, hazardous and ionizing wastes. At this time there is no federal policy concerning final disposal of high-level radwastes following reprocessing to recover fissile materials. Currently, used nuclear fuel rods are being unsafely stored in pools of water at operating nuclear power plants around the world and this country. The largest such storage is at Browns Ferry, AL.

ALABAMA HAZARDOUS WASTE MANAGEMENT ACT

State Senator Jim Bennett of homewood is pushing for the inactment of a law by April 1, because he says if it is not passed the EPA will take over the control of hazardous waste permitting in Alabama. As Alabama law now stands the State would do better to allow the EPA to take over.
(CONTINUED ON OVERSIDE OF THIS SHEET)

The Alabama senate has already passed Senator Jim Bennett's bill to amend the Hazardous Waste Management Act of 1978, as amended. This is an attempt to inform citizens and members of the Alabama legislature as they further deal with these issues. The Bennett version needs much further considerations prior to enacting into law. Currently EPA has uniform laws for all of the states. Several states now allow EPA to run their Waste Management programs.

To me the cohesitation seems to be in the direction of "letting" Alabama NOT to follow these uniform federal laws, by allowing Alabama to be less strict. Monitoring would be far better under the EPA than under the Alabama Department of Environmental Management (ADEM).

The EPA is correct in seeking repeal of the provision of the Alabama State law under which any application for a permit to operate a hazardous waste site is automatically approved unless the ADEM acts on it within 90 days. However, Bennett's bill, to correct this, is not much better, because his bill, instead, recommends that the ADEM "shall act with all reasonable speed in reviewing the application consistent with protecting the public and the environment."

This new position allows too many value judgments by the ADEM, which are already properly spelled out in the federal regulations for all of the states. Perhaps, Senator Bennett has been misled if he really believes that the ADEM can properly manage hazardous waste by "continuing to receive approximately \$800,000 per year in funding from EPA." Apparently Alabama will become the state to receive nearly all of the wastes from the Southeast compact states (and other states if they pay the fees and wish) a great deal of "outside" money must come from somewhere. One should question how much real monitoring will be done under the ADEM control. This would be cheap for the big polluters, but most expensive for health care in Alabama.

However, the proposed Bennett bill (S.22) is full of loop holes for unwanted bad industries that would like to operate in Alabama.

The Minus Act passed by the legislature to allow one hazardous waste disposal site in each county, would be an unwanted and an unpoliced proliferation. The question of where dumpsites should be allowed is one of geology, not of business as usual.

Representative Nelson Starkey of Florence would like to repeal the Minus Act. The management of hazardous waste should not be allowed to degenerate into a battle of what company can do the "cheapest" job, if health and the environment are badly impacted. Like telephone service and electric power management, one properly supervised monopoly can do a better performance than several competing companies on a more cost effective basis. Perhaps the US EPA and the proposed Alabama Public Service could jointly perform more effectively rather than trying to use many dumpsites and several contractors.

NEED FOR COMBINED JURISDICTION

The first section of Bennett's senate bill (S22-30-3) in defining hazardous wastes excludes radioactive wastes and their by-products. However, the Southeast Interstate Compact Act (Act number 82-328, April, 1982), is regulated by the Nuclear Regulatory Commission and not the EPA. One must realize that many nuclear activities produce huge amounts of both ionizing wastes as well as chemical wastes.

Disposal of various kinds of wastes in Alabama from NRC operations will introduce many problem of many kinds of wastes outside of the jurisdiction of ADEM and the EPA. In Alabama radwastes are regulated by the Division of Radiological Health in the State Health Department and the Alabama Department of Energy. The State Health Officer now, Dr. Ira Myers, has little or no jurisdiction of the activities of the ADEM. There are many wastes that are mixtures of chem wastes, radwastes, and toxic wastes, and regular hazardous chemical wastes. The NRC tends to not consider radwastes other than high-level as non-existent for purposes of final disposal. This would be a dangerous precedence for Alabama, since these levels of radwastes lower than high-level, pose eminent problems because they can cause cancers, birth defects and hereditary changes.

DISPOSAL in the proposed Bennett bill discusses only land or water disposal, but fails to address air pollution from incineration of wastes, at places like Emelle, and Tuscaloosa or from incineration from ships at sea.

"Perpetuity" is defined as only 200 years following closure. Many of these wastes will be around for millions of years, but no provisions are promulgated to protect underground aquifers and ground water resources. Everyone knows that all dumpsites eventually leak. The Clay-chalk formations contain faults, artesian wells, sink holes, and lateral-moving water in horizontal stained seams.

Because some industries are proposing the disposal of their toxic and hazardous wastes on their factory sites special provisions must be made.

Part 11 of definitions of WASTE excludes solid or dissolved materials in domestic sewage, however, most publicly-owned waste water treatment plants accept large amounts of some commercial and industrial wastes that can be hazardous or toxic. The same is true of by products of Atomic Wastes.

Trade secrets some times hide pollution. Those that do should not be excluded under the proposed Bennett Bill.

Item 18 State Board of Health is called the ADEM. Surely only the Health Department should be in charge of health related problems. Likewise the the State Health officer in item 19, is listed as the director of the ADEM, who is now Mr. Broadwater.

Who and how will "reasonable speed" be judged by the ADEM in reviewing applications?

Who would monitor private site disposal and at what intervals?

Posting of bond regulations appear to be far too loose such as "...as may be promulgated by the ADEM. Also, part 9 of section 22-30-15 allows too much discretion to the ADEM for training and financial responsibility for qualification to operate a disposal facility. These should be promulgated by EPA and OSHA, not the ADEM.

Section 22-30-17 manifest part C, Bulk shipments by rail or water need much revision by the Department of Transportation and not as promulgated by the ADEM.

Please do read my printed statement of Sept. 30, 1982, before the EPA-Alabama Public Health hearing. RCRA and EPA have nationally-applied standards with modifications for each state.

Some study is needed from other states as to their agreement with the federal agencies to see where does Alabama fit in with other states.

HOW TO SUCCEED IN ALABAMA

From:— Louis G. WILLIAMS, Ph. D.,
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Sept. 14, NORTHPORT, Alabama 35476
1984 (205) 339-1535

Leaky toxic wastes from barrels on a truck enroute to the Emelle, Alabama dumpsite along interstate highway 59, during heavy traffic from the Boston College football game caused work and expense last week for state police and clean up crews. These costs were to the public and not to Chemical Waste Management.

A French freighter, carrying 30 large drums containing 225 tons of liquified uranium hexafluoride gas, which is used in making fuel rods for nuclear power reactors and atomic weapons, collided with a ferry last month and sank in the North Sea off Belgium. Security is lacking for this radioactive cargo which is highly corrosive material which can explode when coming in contact with water, as in oceans and rivers.

Fluorine, the most corrosive substance on earth and some isotopes of uranium and plutonium, highly ionizing materials and also highly fissile (bomb-like), have been and are being orchestrated for large roles likely to occur in Alabama and Mississippi. Salvaging these 30 drums from the sunken French freighter is expected to cost \$50 to \$67 million. The U. S. (like the Westinghouse Corporation) is trying to get the market for returning used fuel rods to Alabama from around the world and over the U. S., however much is already going to France and to Russia (as was the cargo in the wrecked and sunken French freighter). In the U. S., however, the need for fuel rods has been greatly reduced because nuclear power plants have been proven to be most ineffective and a health liability.

A similar accident could occur along the soon-to-open Tenn-Tom waterway from a program for bulk barge shipments and also from wrecked trucks along interstates. These kinds of cargos of fissile materials are recovered from "spent fuel" with much of the waste ionizing material left either in storage or from unsafe burial at the "approved" factory sites. At these kind of operations not only are dangerous radwastes produced but huge amounts of the most caustic wastes of fluorine are produced for Alabama disposal. This is a double hazardous operation from a radioactive standpoint and a chemical viewpoint.

The interim committee, headed by state senator Larry Dixon, would make public the proposed state contracts that involve Alabama in industrial uses of toxic, hazardous and ionizing materials. Also,
(continued in above right column)

ALABAMA EDUCATIONAL PRIORITIES

No one should be allowed to attend a two-year state college who will not have the fundamentals of reading, writing and simple arithmetic. No technical school should be set up with a program that allows uneducated students to learn only the skills on how to do a job that have bad risks from dealing with dangerous toxic, hazardous or ionizing materials. Ignorance of chemical or ionizing laws excuses no one from their dangers. Man-made regulations can and may legalize death.

contractors for the federal government (mostly national security contracts and contracts with the Department of Energy) apparently believe that Alabama people have the highest risk acceptability of any state (perhaps with Mississippi an exception) in the United States. This would be very cost-effective for the United States, while highly detrimental to many aspects of Alabamians.

INVOLVEMENT OF THE STATE LEGISLATURE

The entire state legislature should have a public hearing to freely air this well-known orchestration before time runs out to reconsider. Too much has already been sealed. For example a recent order for Chem Waste to stop burying PCBs by EPA, while bad, is of little consequence as compared with attempts to not publicly discuss the perils of ionizing materials in Alabama.

Both Chem/Waste and EPA are delaying the solution of how to handle the huge and unsafe storage of PCBs at the Emelle dumpsite, perhaps as a smoke screen to cover the orchestration of much worse Alabama problems of ionizing materials that are slated for Alabama. The media report a move to incinerate either on land or in the Gulf of Mexico huge backlogs of PCBs in storage at Emelle. When will the media tell the public that incineration is not the solution to problem incineration toxicity. Incineration reduces the volume of the wastes, but spreads old and newly-formed toxins into the air, which are mostly invisible, but they still cause problems either in the Gulf or over land. Any incinerator that stops toxic air pollution would not be cost effective to operate.

WHERE IS THE JURISDICTION?

The public must be informed that OSHA, EPA and ADEM do not have any jurisdiction in the international waters of the Gulf of Mexico. Should the EPA allow Chem Waste to incinerate PCBs or materials contaminated with ionizing materials in the Gulf of Mexico other nations could use this example to also incinerate their wastes there. Incineration does not change radioactivity, and many trace metals, which do not burn, would accumulate in food webs either in the food webs of the ocean or from land organisms. For example the seafood industry would be adversely affected.

The solution to ocean dumping or ocean incineration must be resolved by inviting foreign countries to participate in ocean pollution problems. Greenpeace is now doing a commendable job of attracting attention to oceanic pollution.

ATTITUDE ADJUSTMENT FOR INDUSTRIES

The charge that the Alabama industrial climate turns off new industries may be accurate. Only industry known to be dirty would want to come to Alabama if fouled conditions are allowed. On the otherhand new industry with high technology and clean byproducts would be turned off. Alabamians should be highly suspect of those industries that other states do not want.

Alabama needs a program that will attract clean industry only. Desirable industries will not come to Alabama if we ruin the life sustaining resources of this state. New Jersey is an example of a state that was over orchestrated and may never recover, with high contamination of its valuable ground water resources.

The redneck perception in a story in the Tuscaloosa News (and several other newspapers) on September 12, says that "executives searching for industrial sites often bypass the state before considering its plusses." I hope that this is not true for healthy, clean industries.

Apparently profiteering orchestrators are still working very hard to get more of the highly dangerous factories into Alabama. The scenarios tend to cash in on using the two-year technical colleges to select and to train for cheap, risky jobs, which do not require a sound education. On the other hand, Alabama does have a base for "HIGHER" technical and professional education unmatched in many states. This is true because professionally-trained personnel are already at work at places like Huntsville in the space program, or in medical research at the UAB Medical School in Birmingham; or with many fundamental programs in basic research and engineering at the University of Alabama at Tuscaloosa or at Auburn University.

ROLE OF THE EDUCATED AND NOT SO.

EDUCATED STUDENTS

Training uneducated people, regardless of their certificates from high schools and some technical schools for the new technology of hazardous jobs dealing with hazardous materials and dangerous working conditions should be for on-the-job training at the factory or dumpsite, if Alabama must have these kinds of industry. This kind of training at a college level would be an insult to real education. In-house or on-the-job training using special industrial tools (which are very expensive) would be the most effective way of getting the training done without wasting taxpayers money.

Generally the high technology for making nuclear weapons, reprocessing used reactor fuel rods, and disposing or "temporarily" storing hazardous, toxic and ionizing materials, are not such in demand in other states (why did our state get top voting to become the dumpsite when the radioactive dumpsite for the Southeast closes in Barnwell, S. C.?). The Alabama Develop Office and our informed legislators and the governor's office should come clean! To make our state great we need a kind of information service that will permit good rednecks to refuse to be in the number one position for environmental badness and unhealthy work ethics. In my dealings I find that rednecks, by other states, are perceived to be goofs who will do dirty work with dangerous conditions and materials at a low cost that may help the national security and lower electric rates to other states, while trying to insure shareholders of high interest or dividends to buy nuclear utility stocks.

Do the people of Alabama want to know that there is a direct link between "spent" nuclear fuel rods and atomic weapons? This weapons program may become tremendously large in Alabama with lots of federal support, because our rednecks may be for sale, but don't know it. How many so-called young people groups, wanting to protect their future, have been infiltrated with special friends of the special interests, such as the recent meetings held on August 24-25, 1984 at the Livingston County Courthouse and at the meeting of Southern Cooperatives at Epes, Alabama. Apparently leaders from across Alabama, Mississippi, Louisiana and Tennessee joined hands across race and class lines to fight against toxic hazards. A leadership handbook was used.

I have participated widely in numerous "groups" to protect humans and their environment, but I have found myself frequently a victim of being misled. There are many Pied Pipers (like the one that played a pipe and let the rats out of Hamelin, Germany), but in Alabama one would have to know how to deal with special interests and red necks. I have trouble in trying to communicate the "real" problems of waste management because of the ignorance of Alabamians or the lack of media to present "other" sides of truth!

INFORMATION SERVICES

Perhaps red necks are good for Alabama. The public should be told that Alabama has the resources to have cost effective, and clean industry. If we turnoff dirty industries that are also not cost effective, and instead attract clean industries as a state we have the potential to economically boom. We must discuss the issues more, not less. For example public education must not permit incompetent teachers. Students at all levels must pass health tests. Quality at all levels must be carefully spelled out. The use of flexibility as an excuse for a misuse of state funding and the making of contracts using state funds for private contracting must have more public exposure, even in those instances where a federal subcontractor is delivering a service or contract for a defense or energy federal agency.

The role of the Alabama Development Office, the consent agreements by the State to polluting industries; co-suit among employers-employees do need spelling out by state law. Somehow injury from innocents should be outlawed to both management and its employees when a backlog of data on the real conditions can be made known.

STOP ORPHANING BAD WASTES

Permission for industry to store finally dispose of dangerous waste products on factory sites that will be come property (and risks) to the State should be outlawed or made plainly public information. More effort should be made to treat waste problems at the origin, rather than cheaply (to them) sending them to Alabama, where the cost will not be cost effective to all of the citizens of the state.

Safety Myths For Deposits in Chalk

The security of dangerous wastes (toxic, hazardous, and all levels of ionizing) in chalk deposits in the black belt counties has already been proven to be unfounded for numerous reasons. Alabama, but on a risk acceptable basis could be "good" for the balance of the nation.

The Chemical Waste Dumpsite at Emelle in Sumpter County has been getting too much attention, while wholesale orchestration is moving in other courts with chalk deposits to allow "very bad" polluting and costly features (cancer, birth defects, unwanted hereditary changes) with no recourse to hurt people from ground water contamination living area becoming uninhabitable, etc.

The building of waterways and super highways for bulk shipments of dangers is desperately in need of reevaluation for industrial planning. There are problems of "giving" industrial wastes to public treatment facilities; with incinerators that spread toxic and metallic trace metal wastes. Acceptable drinking water in many areas that will become untreatable or too expensive to treat. Far too little real monitoring is taking place. How much of the problem is with government rather than with the pollution?

SURVIVAL TOMORROW

Atomic ignorance today in Alabama will continue to generate nuclear garbage and diseases of the future

Most of the rest of the country has been moving away from nuclear power plants. The North would like for the South to generate clean electricity for the North provided the South retains the radioactive wastes. A compact of nine Southeastern states could decide that Alabama is the "best" candidate for the burial of low- and intermediate-level radioactive waste. There is no policy for high-level radwastes. We have better uses in Alabama for our surface and underground water resources. Other states are running out of water. We have more economic uses of this good water that can serve the rest of the country when it runs out of clean water. This is not an extreme viewpoint. We are all environmentalists! Public Affairs of Chamber of Commerce and Industrial Development do need help from all of us to help the economy and make the world safe and thriving.

September 18, 1981

To:— The Alabama Legislature
Governor Fob James of Alabama
The Alabama Department of Health

From:— Louis G. WILLIAMS, Ph. D.,
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University, Alabama 35486
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WHAT IS HAZARDOUS ?

Promoters of hazardous waste landfills for Alabama are saying that the chalk-like deposits at Emelle in Sumpter County and also that proposed by Lawson Acton, president of Browning-Ferris Industries of Alabama, for a site between Montgomery and Selma, are ideal from their geological make up. These promoters speak about low permeability and high capacity by this chalk to absorb. However, the promoters have not reported that over the long period these hazardous wastes must be segregated from the environment into which they may leak, move and chemically interact with one another and the geological makeup to produce serious contamination to the giant aquifer (a great water resource) underlying these chalk-like deposits.

This aquifer is a great water resource and is far more of a State and national asset than any hazardous waste dumpsite.

Time is limited. State Representative Ronald Johnson of Sylacauga may push for approval of a nine-state compact in the upcoming legislature, beginning on September 29. Reapportionment is supposed to be the main purpose of this special session, but do not be surprised should hazardous wastes and their dumpsites for Alabama be introduced that will include radioactive wastes.

The proposed compact draft for all of the states will be presented to a meeting of the Southern governors' conference in Puerto Rico on September 29. Another meeting to draw up a final draft will be held in Atlanta on October 19. With the Reagan administration planning to spend \$1.5 trillion on defense in the coming years, Gov. Fob James and the Alabama Development Office has asked the state's congressional delegation for help in getting a slice of the pie. Please let's don't ask for industry that will result in Three-Mile-Islands or Love Canals for Alabama. There will be plenty of clean and safe industries that want to come to Alabama. We do need the jobs. We can win in competition against other states for quality industry, not nuclear fuel plants or spent fuel reprocessing plants.

NEED FOR PUBLIC HEARINGS AND MEDIA OUT

The Alabama legislature must not move too quickly to approve this proposed nine state compact. There is much need for further study. The legislators, with whom I have tried to discuss the liabilities for all of us, are absolutely ignorant about the awful implications of radwaste that other states will not tolerate. Certainly the citizens of Alabama deserve a responsible public hearing before we accept conditions that may destroy our natural resources while advertising ALABAMA THE BEAUTIFUL!

State representative Larry Dixon of Montgomery is correct by indicating that the governor should not make this momentous decision to allow radwastes to be accepted in Alabama from other states unless the legislature studies all of the far-reaching dangers and approves.

Alabama has much to gain and nothing to lose by refusing to become a part of compact or agreement among nine states of the Southeast to bury their "low-level" radioactive wastes in Alabama. The proposition to join the compact could be a trick to get Alabama to join now and get radwastes by 1990, or if we don't join by 1986. There are state rights. If we don't ever want radwastes we don't ever have to take them, especially from other states, with or without a compact.

Federal Radwaste Policy Act

The policy act passed by congress last year, provides that any state which is not a compact member by 1896 must buy its own generated waste materials. As currently operating, Alabama could very easily handle its truly "low-level" radwastes. A second hazardous waste dumpsite 20 miles west of Montgomery is now under consideration. Already we have a notorious hazardous and toxic waste dumpsite at Emelle in Sumpter County. It is number nationally. Contrary to "expert" opinion the Selma chalk and clay deposits are not safe enough for the kinds of wastes that have been or may be disposed at this and other proposed sites. Assurances now will not be enough unless there is real insurance when the aquifer is contaminated and well water is undrinkable and when ownership of liability cannot be documented. So far in the U. S. no policy has been developed for the safe disposal of spent fuel nor for dangerous by-products from reprocessing it. These transuranics with the spent fuel, stored in pools of water in a hazardous situation at present nuclear power plants throughout the country. They are growing!

(Continued on the reverse side)
To NRC- item fourteen, from Louis G. Williams 2/8/86

WHAT ARE LOW-LEVEL RADWASTES?

The citizens of Alabama are unaware that a new and very large source of very dangerous radionuclides will be released when reprocessing of spent nuclear fuel (largely unspent) begins, as recommended by president Reagan. Many newspaper accounts are misleading in reporting that low-level radioactive wastes are those generated by X-rays (How does one bury an X-ray?), contaminated rags, shoe-covers, clothing, nuclear medicine, research isotopes, etc. This is mostly correct, but "low-level" as applied to radioactive substances is a misnomer. In reality, these are huge volumes of water surrounding the nuclear fuel rods in a reactor become higher than low-level. This water that surrounds the rods is radioactive from substances like cesium-137, strontium-90, and cobalt-90. These isotopes and others are concentrated from huge volumes of contaminated water to concentrations much higher than hospital wastes, etc. into resins. The result is an intermediate-level of radwaste, which poses problems for their safe transportation along highways and also for final disposal. These resins with very high concentrations have been "called" low-level and have been disposed by burial at Barnwell, South Carolina. Most hospital wastes that have been called "low-level" contain radioactive carbon and/or radioactive hydrogen, which is very low-level and the bulk of it may be readily encased with relative safety. These do not need to be shipped to Barnwell, etc. or to the other two low-level dumpsites in Nevada or Washington.

WHAT IS SPENT FUEL REPROCESSING?

It is a very dirty process in which fissile plutonium-239 and fissile uranium-235 are chemically removed from spent fuel or from high-level wastes from weapons development. Most high-level waste is now from operating nuclear power reactors and it is rapidly growing. Taking out fissile uranium and plutonium does not clean up spent fuel or weapons wastes, since they contain huge amounts of high-level transuranics that pose major problems for their long-term safe disposal because they are hard to handle because of high thermal heat, highly radioactive and longevity of millions of years. None of the real low-level wastes fall in this category. At this time there is no known safe way to dispose of wastes of fuel rods and wastes of weapons development.

FAILURES

All attempts to reprocess spent nuclear fuel on a commercial scale in this country have failed; so spent fuel is accumulating in pools of water at all reactor sites. Attempts at reprocessing were tried and they all failed at Morris, Illinois; Barnwell, S. C., and West Valley, New York. The attempt in West Valley left the state of New York nearly bankrupt from a clean up operation that has already cost the state of New York a billion dollars and the site is still heavily contaminated. Do we really want reprocessing in Alabama?

NUCLEAR ACCIDENT INSURANCE

The federal Price Anderson Act, paid by taxpayers, limits damage claims from nuclear accidents to \$500 million. Three Mile Island is a continuing accident, which has financially hurt seriously both the electric utility industry and the federal taxpayer by bailing out costs. The industry is now turning to congress for extra insurance funds that could force the taxpayer to bail out the whole nuclear industry. At a time when the government is already seriously over inflated the Reagan administration says (fortunately) there is no need to increase the taxpayer limit on nuclear accident claims.

A General Accounting Office report has concluded that an emergency aid package would be needed to rescue TMI from bankruptcy. Both the stockholders and customers have been hurt.

Representative Ted Weiss of New York has estimated property damage could go as high as \$14 billion dollars in a single nuclear accident, such as reprocessing or another Three Mile Island.

WHERE DOES ALABAMA POWER COMPANY STAND?

The Southern Company, which operates power companies in Mississippi, Alabama, Florida and Georgia, generates far more electricity in Alabama than is used in Alabama, such as from plants at Wilsonville and Demopolis. The status of Farley Nuclear Plant is yet to be determined. Alabama is a net exporter of electricity. With the abundance of coal and water resources Alabama users of electricity should have the cheapest rate of all of the states.

A number of nuclear industries would like to move into Alabama to take advantage of cheap electricity, plenty of water, nearby radwaste dumpsites, river transportation, and low environmental protection regulations by the state. We hope that this is NOT what governor Fob James is looking for. With our resources we do not need to look for industries which use our resources but leave the worse kind of pollution and health effects.

BEFORE WE COMMIT Alabama to unsafe land disposal for radwastes we must first assess the advantages of disposal in deep areas in clay below the ocean floor. Subseabed disposal could be done in an abyssal clay area covering nearly 30% of the seafloor or 20% of the earth's surface. Let's abandon intermediate and high-level radwaste disposal on land until subseabed disposal is evaluated. If we must resort to land disposal, this should be in the DRY western states; not in any of the suggested nine state compact.

HAS WESTINGHOUSE GIVEN UP ON ALABAMA?

Westinghouse has withdrawn its application from the NRC and the state of Alabama to build and operate a nuclear fuel plant at Prattville. I took a very active role in causing this withdrawal. However, the Westinghouse license application and its environmental report do strongly indicate that Westinghouse would like to process spent nuclear fuel in Alabama and perhaps fabricate nuclear fuel rods containing thorium-232, and nonfissile uranium-238, which during irradiation in a reactor become respectively fissile uranium-233 and fissile plutonium-239. This would be real innovation and not in current use at any commercial nuclear power plant. How safe would this be?

For one who has been on the inside of radwaste problems since the early research in the 1950's, and who has strongly criticized nuclear power and tried very diligently to reach the public by trying to expose a strong nuclear profraternity among scientists, engineers and government agencies (old AEC, NRC, DOE, etc.) I have only been partially successful in attempts to uncover and expose the cloak of tight security regarding the safety of radiation workers, citizens, industry, government and fellow scientists about the long-range disadvantages from health, safety, financial aspects and the associated mental pollution for being for the current brand of nuclear energy.

Surely the electric utilities have been oversold on the advantages of electricity from nuclear power. The current fad among proponents is an attempt to turn radwastes from atomic weapons development and spent fuel from reactors into "browns" by reprocessing without telling the citizens about the high-level transuranics which are big waste disadvantages.

To TVA Board of

PUBLIC HEARING CONCERNING THE SPENDING OF
TWO MILLION DOLLARS FOR THE MANAGEMENT

Directors

AND STORAGE OF NUCLEAR REACTOR SPENT
FUEL WASTES. AT MUSCLE SHOALS, ALABAMA, on Thursday, Nov. 30, 1978.

FROM:— Louis G. WILLIAMS, Ph. D., Aquatic Ecologist, 1246 Northwood Lake,
NORTHPORT, Alabama 35476, Researcher on fate of waste fission products.

QUESTIONS FOR THE TVA-BOARD MEMBERS:—

- 1) Will the management and storage include ONLY TVA-generated spent fuels?
- 2) Is the long-term plan for the Department of Energy (DOE) to reprocess these fuels for the future recovery of uranium-235 and PLUTONIUM?
- 3) What kind and how much insurance at taxpayer's expense will the TVA provide to protect citizens during shipment and storage?
- 4) Will the citizens in the danger area be provided with emergency procedures prior to the beginning of the temporary storage plan?
- 5) If the DOE decides to select a national burial site in the salt domes of Perry County, Miss., or in the chalk formation in Sumpter County near Livingston, Alabama (Costs at \$500 million to one billion to build and about 80 million a year to operate). Will the TVA continue to consider "temporary" storage at Browns Ferry?
- 6) Where will high-level military nuclear wastes—now being stored in pools of water—be permanently buried?
- 7) Where will spent fuels from nuclear reactors, not now a part of TVA, be buried, and who will pay for this huge expense that will be for ever?

PRESENT STATUS

The DOE's office of Waste Isolation has held public meetings in Columbia and Richton, Mississippi in November, 1978. High-level nuclear wastes currently are being kept in pools of water at reactor sites, which will continue for about a decade until permanent "disposal" can be found. Huge amounts of nuclear garbage have already accumulated, while temporary storage is used at the sites of the reactors. These pose a number of compounded risks along side the reactors.

KINDS OF NUCLEAR WASTES

Nuclear power plants produce two kinds of nuclear wastes:— 1) fission products from uranium-235, such as strontium-90, cesium-137, and iodine-131. 2) and PLUTONIUM, which is produced in the reactor when nonfissionable uranium-238 becomes plutonium-239. Plutonium is the most toxic substance on earth. Presently there are three levels or concentrations of nuclear wastes:— 1) Low level wastes are now discharged into the atmosphere and into the public waterways; 2) Intermediate-level wastes have been buried at a few selected sites. Some of these have been closed because they were badly leaking. 3) High-level wastes have not been buried. Instead, they have been and are being stored in pools of water for future "disposal".

ENVIRONMENTAL FATE OF FISSION WASTES

My own careful studies and those of many others show that low-level fission products, that are discharged into the air from weapons testing and power reactors, or into waterways or from leaking burial sites, do not remain low-level but tend to accumulate in high concentrations in food webs.

About 90% of cancers are believed to be of environmental origin. Some are from man-made synthetic chemicals, a few are from natural substances and background radiation, but plutonium and fission products are known to shorten life, cause cancers, and to produce unwanted genetic defects. Federal license allows a repository at Barnwell, South Carolina to receive intermediate-level nuclear wastes from this area.

ULTIMATE BURIAL SITES FOR NUCLEAR WASTES

The DOE is granting contracts for the study of "SAFE" burial sites. However, studies already made show that current sites under study are not safe. In Alabama and Mississippi (and other sites) the use of salt domes and chalk deposits are unsuited for final burial of heavy level nuclear wastes that will be around for 300 thousand years. Any water present will be heated by the wastes into vapor that could produce a force strong enough to crack the "so-called" containment. No geologist can guarantee that in 300 thousand years or in ten years conditions will be unchanged.

RIGHTS OF CITIZENS IN ENDANGERED AREAS

Communities near areas of nuclear waste storage and those in areas of nuclear waste "disposal" need to have assurance and insurance to protect their civil rights, by having enacted laws BEFORE as well as after accidents occur.

PAST ERRORS

In March, 1979, the NRC released the news to the public that the health effects to future generations was in error by a factor of 100,000 for the amount of radon-222 emitted per annual fuel requirements.

NUMBERSO PRINCIPLE

The Union of Concerned Scientists have recommended to congress that the Public Integrity Section of the Criminal Division of the U. S. Department of Justice carry out an investigation of the conduct of former AEC officials, and now NRC officials, to determine any role they may have had in nuclear safety coverup.

We cannot see, feel, nor see radiation that is making us sick. Nuclear plants do generate power, but their wastes take human lives. Six states with the largest nuclear facilities have the most rapidly increasing cancer rates.

Soon the truth about "unacceptable" radiation levels will become more apparent and the American people will no longer wonder who has been telling the truth. We cannot backup. The TVA now has a big opportunity to demonstrate responsible leadership about the future of nuclear wastes by coming out in support of the principle that there is clearly NO SAFE method of disposal of nuclear wastes.

DOES ALABAMA WANT TO BECOME # 1? See the options on the reverse side of this sheet!

TO NRC: Item Fifteen from Louis G. Williams 7/10/81

Does Alabama Want to Become #1?

The lead story in the Birmingham Post-Herald on November 3, reported that TVA will store Eastern U. S. nuclear wastes. Board chairman of TVA, David Freeman, was quoted as saying that the Department of Energy would pay TVA for this storage. The costs were estimated to be about \$500 million for the facility. This cost does not include the several costs for storage at each nuclear plant nor the costs of shipment to the composite site at Oak Ridge or Browns Ferry, and the problems of security during shipment.

At a TVA-Nuclear Regulatory public hearing at Iuka, Mississippi, on July 6, 1978, I presented many scientific and economic reasons why present nuclear plants are now infeasible. The DOE paying TVA for this storage is out of our federal dollars and is, therefore, not free. The news release said that the storage facility would hold highly radioactive spent or used uranium removed from atomic reactors after several years of nuclear reaction. This is partly untrue or misleading because uranium fuel has been changed about once a year, not several years, and the products to be buried or stored are not used uranium only, but are newly formed unwanted waste radioactive fission products, such as strontium-90 and cesium-137, as well as a highly poisonous substance, plutonium. These are derivatives of uranium and were not here before the fission. Thus we are now creating new materials that are highly radioactive and undesirable, and for which there is no safe storage nor disposal. How many unwanted cancers will be formed? How many birth defects?

The enrichment of uranium ore to reactor-grade fuel presently uses huge amounts of TVA-generated electricity that is largely paid out of the federal taxes and not by the presently too-high electric bills.

The costs of managing nuclear garbage, if we must have it, should be a cost to the users of the nuclear generated electricity, and should not be paid from tax dollars.

From:— Louis G. WILLIAMS, Ph. D.
Aquatic Ecologist
1246 Northwood Lake
NORTHPOET, Alabama 35476
November 6, 1978

In this news release far too little attention has been given to the risks inherent in shipment, storage and security of substances that people cannot see, smell, or feel, while they are being hurt. Also, the U. S. continues to use huge amounts of TVA-generated electricity to change uranium ore into reactor grade uranium-235, which is being sold below costs to Japan so that the Japanese can make electricity to produce commerce and products that undersell ours in the international market places. The media owes the public a service by exposing more of the bad side of nuclear power. We need to develop solar energy and nuclear fusion, while moving away from fission.

When will the public be told that the full costs of generation of electrical power by fission from uranium-235 is far more expensive than from coal because all of the "free" costs to the utilities by the federal government are not free.

Alabama is already number one in the generation of nuclear wastes. We are bringing in huge amounts of unwanted, chemical wastes from other states for burial in a land disposal site near Livingston, which includes dangerous PCB's. Alabama is among the ten highest states in the production of nonradioactive hazardous wastes. PCB's dumped in North Carolina are being scrapped up for disposal in Alabama.

We deserve to be number one in Football, but do we really want to be number one in storing very hazardous wastes?

COST & HEALTH-EFFECTIVE ELECTRICITY

From: Louis G. WILLIAMS, Ph. D.,
Contemporary Ecologist
1246 Northwood Lake
NORTHPORT, Alabama 35476
October 20, 1983
Phone (205) 339-1535

HOW TO SEPARATE VALUE IN SALESMANSHIP

A PR blitz by the management of electric utilities has been aimed at selling the concept that nuclear power is safer and more economically affordable than electric power from coal generation. This concept will boomerang if knowledge is withheld that has been discovered since nuclear plants were permitted under the old AEC or the NRC. Future exorbitant costs of nuclear plants should be frankly revealed. The public needs to know, for instance, that the nuclear industry did not learn that the bombardment of some reactor metals by neutrons and high temperature have caused the alloys of steel being used to become brittle and to crack. Some of the cracks leak coolant water and steam that drives turbines. The free neutrons in this water and steam can also produce isotopes that are radioactive by conversion from stable atoms. This can cause the parts of present nuclear plants, that were constructed with stable or nonradioactive parts, to become radioactive. One of the costs of generation of fission generation of electricity will be very expensive dismantling, when the nuke is too old and nonproductive and highly radioactive. In addition to the fission products, parts of the nuclear plant that were not radioactive when built are highly ionizing or radioactive at the time of dismantling. Decommissioning should be figured in the cost of electricity now, rather than at the end of its productive life.

To the governor, the Alabama legislature, congress, EPA, Alabama Department of Environmental Management, managers of toxic, hazardous and radwaste dumpsites, and to citizens of another side.

COAL VERSUS FISSION

Now that the Alabama Power Company or APC and TVA have been operating nuclear reactors for several years, the shutdown of these reactors, whether by 1) order from the Nuclear Regulatory Agency, 2) from equipment failure, or 3) from excess generating capacity, any or all of the above will increase the cost of generating electricity for residential customers of both TVA and APC for U. S. citizens for the next 15 years. The debate over the pros and cons of military build up and the peace movement is not to be confused with the technology of how we get electricity. Unknowingly many activists in the peace movement are unaware of the technical issues; the generation of electricity.

NEXT GENERATION SOLUTIONS

Perhaps hydrogen controlled fusion will be the main energy source in about 30 years. In the mean time the answer is still coal, not fission, especially in Alabama where we would receive huge amounts of dangerous wastes, while exporting electricity, clean electricity to other states at affordable rates to them, while our own rates would be too high for residential customers.

TWENTY-YEAR USE OF FISSION POWER

Because the electrical industry has already over-invested in fission power the industry must salvage and try to recover by replacing pipes, vessels and valves that are unable to withstand bombardment. Free-moving neutrons cause present metals in these reactors to become brittle, to crack and to leak, releasing unwanted ionizing products of fission, which give off ionizing, radiation, which is unacceptable to the biosphere at current levels. Some non-radioactive metals in reactors become ionized by taking on neutrons.

The statement by some advocates of nuclear fission power, that coal-generation of electricity is more expensive than nuclear, may be true only because the method of computation has been based on coal versus uranium. Much greater capital investment is necessary to build and to attempt to operate and maintain nuclear plants of today. The cost of fuel, whether coal or uranium, is now variable and minor. The APC must stop lumping coal and nuclear together in projecting future and current costs, since nuclear is far more costly, when all facets have been considered.

CURRENT PUBLIC RELATIONS BLITZ

To an extent newspapers, TV, and radio are utilities. These media of information services should serve the public by presenting what the people want and need to know from both free news stories emanating from the public utilities and their paid advertisements.

REACTOR CRITICALITY EXCURSIONS

Loss of coolant water can lead to a chain reaction and criticality, which can lead to an excursion or run-away reactor (formerly called meltdown). Criticalities can be very disastrous, because highly ionized material can be blown into the air. This air is composed of tiny particulates and hot gases which emit dangerous alpha and beta-free particles and gamma rays. This plume from a run-away reactor could cover a large area from the air over land that is inhabited by the biosphere including people. The movements of this plume away from the reactor site will depend mostly on the prevailing winds at the time of criticality. Fallout from the plume are from fine radioactive particulates, which could contaminate a large area near the reactor site. Gases will mix with the air to move great distances. A city like New York could not be successfully evacuated unless several days notice is given. Probably there would be no atom bomb-like explosion (although possible), but steam explosions and hydrogen gas explosions can occur. The hydrogen gas is formed when hydrogen is catalytically formed from the hot gases and particulates would be moving like a strong wind away from the reactor.

Recent discoveries from Three-Mile-Island Accident now reveal that the dangers are far worse than promoters would like to believe. TMI has taught us that we put fission reactors on line before we had the technology.

Microorganisms, and higher plants and animals and humans could receive excessive doses of ionizing radiation without knowledge through their natural sensors. People near the criticality excursion would receive instant excessive burns to their skin and eyes.

(CONTINUED ON THE OVERSIDE OF THIS)

To NRC-item sixteen, from Louis G. Williams
Feb. 8, 1986

In Alabama we must stop living in a bandaide society by trying to find the long-term solutions to problems of ionizing materials. We need to think more of the materials that give off ionizing radiation and forget about the radiation from color TV. You do indeed get far more ionizing radiation from the nuclear fuel cycle than from watching TV. However, some of the past TV programs do produce a kind of mental pollution that can be dangerous to your health because these programs have stressed radiation rather than huge amounts of materials that give off IONIZING radiation associated with the whole nuclear fuel cycle. This kind of ionization is from both nuclear power plants as well as from atomic weapons and their development.

BANDAIDE TECHNOLOGY

In Alabama we must stop trying to live in a bandaide society by attempting to find the long-term solutions to problems of ionizing materials. We need to think more of the materials that give off ionizing radiation from the nuclear fuel cycle than from watching TV. However, some of the TV programming, especially the public variety, has been more responsible. The best education is that a third of the nukes have been shutdown because the promoters of bonds, dividends and stocks have learned that they don't pay. A good deal of sales pitch will be necessary to make the current PR blitz a success.

The attempts by TVA and the commercial electric utilities to fix the leaking cracks in pipes, valves and vessels by welding is a temporary and very expensive stop gap measure. The TVA has already spent millions on temporary welds for faulty materials, which will continue to become brittle and to crack. The decision to replace these materials at Browns Ferry will be very expensive and will cause the loss of reactor service while the repairs are being made. Many of the plants that have been shutdown during some state of their construction may never be finished at a considerable loss to the owners. If they are not finished the wasted construction may be added on to your power bill or your federal taxes, but past stockholders may have already lost, but do not yet know it.

Questions could be asked whether the new materials replacing the defective stock will also hold up over time? Let's hope that the new material is not more bandaide philosophy, because long-term problems of neutron bombardment are still unknown at this time on the proposed new materials. In the aftermath of Three Mile Island the people responsible for putting energy generators on line need to do more testing and homework.

RESPONSIBLE PUBLIC RELATIONS

Public relations of the nuclear industry should begin to take more interest in its residential customers and less concern about high dividends to its stockholders. The huge amount of investment by APC for questionable advertising and frequent and widespread use of press, radio, TV and salaries of PR personnel is mostly charged to the shareholders (according to APC), but this becomes a pass-on cost to APC's customers. The Southern Company, which operates the APC, seems to be more interested in making dividends than making electricity a bargain for its residential customers in Alabama.

HIDDEN COSTS OF ENERGY FROM FISSION

Because past errors have resulted in huge costs, the future of nuclear energy must include expensive disposal of huge quantities of high-level radioactive wastes, which are mostly transuranics following recovery of plutonium and uranium during reprocessing of rad wastes from nuclear power plants. Most nuclear engineers do not consider spent fuel as waste, since it contains fissile plutonium and some uranium that composes the spent fuel, plus huge amounts of dangerous waste fission products and the most radioactive transuranic wastes, those elements not found in nature that are heavy metals with atomic numbers 92 and above. The public knows far too little about these transuranics and the current proposals for their disposal. No current electric bills are paying for management of spent fuel by reprocessing the used fuel to recover the plutoniums and the uraniums or to pay for the final disposal of the dangerous transuranics.

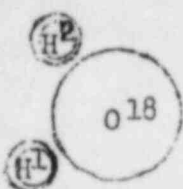
WHO PAYS FOR REPROCESSING SPENT FUEL?

One scenario proposal that is almost federal policy is for the energy department to reprocess spent fuel and radwastes of weapons development around the world to recover fissile plutonium-239 and fissile uranium-235, as well as nonfissile uranium-238. Uranium-238 on neutron bombardment in a nuclear reactor is converted into fissile plutonium-239. The cost of this reprocessing will be a federal cost by taxation, but the recovered uranium and plutonium could have both use in atomic weapons and in nuclear power plants using thorium-232, which would become fissile uranium-233.

Perhaps unknowingly, this generation is giving future generations cancers, birth defects and unwanted hereditary changes, which are permanent.

THREE-MILE-ISLAND BAILOUT

All electric utilities are having to pay heavily for the bailing out of TMI accident, which is still ongoing. The federal government through its various agencies is adding much to your federal taxes and its indebtedness by highly subsidizing the risk insurance of nuclear power plants. This is another hidden cost. Huge stockpiles of radwaste of the high-level (mostly transuranics) are still accumulating at nuclear power plants not only in this country, but around the world. The proponents for the use of this waste claim that the bringing of these ionizing wastes to Alabama is designed to limit the access of these radioactive materials to terrorists who can fashion them into nuclear bombs. While the country could benefit from reprocessing, a state like Alabama would inherit huge liabilities that most states refuse. Until now you have paid only for low and intermediate level radwastes. NO HIGH-LEVEL radwastes have been disposed; they are still stored and are waiting for Murphy's Law to happen. One scenario is to do the reprocessing in Alabama and partly in Mississippi because we have the best toxic and hazardous waste dumpsites in the world. There is a big link between nuclear power plants and nuclear bombs. The Tenn-Tom waterway could be used to bring these radwastes from both overseas and from the many rivers of the U. S. to Alabama. We do need the Tenn-Tom for transport of bulk coal, timber, farm products, and worthwhile products of clean industry.



PUBLIC



US AEC Docket Nos. 50-259, 50-260, and 50-296

to
TVA and
Units 1,
2, & 3 of
Browns
Ferry
NUCLEAR PLANT

(July 24, 1973)

2 August 1973

Memo received on 1 Aug. 1973

HEARING DEMOCRACY

Browns Ferry Nuclear Plant

TENNESSEE RIVER,
ALABAMA

To: The Public hearing by the U. S. Atomic Energy Commission regarding the authority of the Tennessee Valley Authority's proposed Browns Ferry Nuclear Reactor. At the courtroom of the Limestone County Courthouse, Athens, Alabama, on Thursday, August 2, 1973, beginning at 10:00 a.m.

From: Louis G. WILLIAMS, Ph. D. (-pH D), Aquatic Ecologist, Department of Biology, University, Alabama 35486; Home address 1246 Northwood Lake, Northport, Ala. 35476.
Radiation Background of Louis G. Williams:

1. Nuclear research at the Oak Ridge National Laboratory, Ecology Section, Oak Ridge, Tennessee, with these two publications: (A) "Concentration of ¹³⁷cesium by algae," SCIENCE, Vol. 127, Jan. 24, 1958. (B) "Uptake of ¹³⁷cesium by cells and detritus of Euglena and Chlorella" in Limnology and Oceanography, Vol. 5, July 3, 1960.

2. Research at the FWPCA (now EPA) National Laboratory in Cincinnati, Ohio, "Packaged organic materials as monitoring tools for the radionuclides." SCIENCE, Vol. 132, 1960. (B) "Concentration of ⁸⁵strontium and ¹³⁷cesium from water solutions by Cladophora and Pithophora." Journal of Phycology, Vol. 6, 1970. (C) "Effects of contaminants of the Ohio River." Jour. of the American Water Works Assoc., Vol. 55, 1966. (D) Dominant Planktonic Rotifers of major Waterways of the United States." Limnology and Oceanography. Vol. 11, 1966. (E) Relative strontium and calcium uptake by green algae." SCIENCE, Vol. 114, 1964. (F) "Plankton Population Dynamics." No. 663, publication of the U. S. Public Health Service, Washington, D. C., 1962. (G) "Principal Diatoms of major waterways of the United States." Limnology and Oceanography, Vol. 7, 1962.

3. National Water Quality Laboratory, Duluth, Minn. "Should some beneficial uses of public waterways be illegitimate?" BioScience, January, 1968.

4. Dept. of Biology, University, Alabama. "Stream-Velocity effects on the heavy-metal concentrations." J. Amer. Water Works Assoc. March, 1973.

GENERAL STATEMENT

The Calvert Cliffs' decision requires all federal agencies to consider values of environmental preservation in their spheres of activity. The need for electric power is now a balance of value judgments between protecting the environment and the relative need for electric power and future growth, dependent on electric power. Now the quality of the environment must be evaluated against "progress and growth."

70 → NRC - item seventeen - from Louis G. Williams
Feb. 8, 1986

References for the following discussions:
TVA, Environmental Statement. Browns Ferry Nuclear plant, units 1, 2, and 3. Vol. 1. (TVA - OHES-EIS-72-6), Chattanooga, Tenn., Sept. 1, 1972.

TVA's final Environmental Statement on the Browns Ferry Nuclear plant. Vol. 2, Oct., 1972.

TVA's Draft Environmental Statement, with Supplements and Additions, Browns Ferry Nuclear Plant. Volume 3. October, 1972.

My own planktonic studies of the Tennessee River and the Chattahoochee River.

Natural physical and biological laws regulating radiation safety standards in water to aquatic ecosystems including food chains to humans.

RELATIVE IMPORTANCE OF THE PHYTOPLANKTON

On page 3-41 of the Draft Environmental additions of TVA a treatment of the phytoplankton show assemblages in a cross section of the Tennessee River at Browns Ferry to be 350,000 to 2,200,000 cells per liter. My work on the phytoplankton is on a biomass and diversity basis. These estimates seem too low if one uses these for average cell biomasses. What is the average? Only the range is given. However, assuming the very lowest end of the range, which is 350,000 cells per liter. This would be at one-tenth of the flow of the Tennessee River a very huge biomass. Based on my knowledge of ecology of many rivers, including the Tennessee, I must say, in the first place, that this is an inadequate study. Was this study done by a competent and trained plankton expert?

Anyone familiar with river plankton knows that these plankters can build up and disappear rapidly. At moderate concentrations planktonic organisms are noted for their ability to concentrate radionuclides to large concentrations, and that the long-lived fission products, such as the dangerous ⁹⁰strontium can build up to unsafe levels at the top trophic levels because they are concentrated directly from the water by phytoplankters at the first trophic level.

RIVER FLOW DATA MOST VARIABLE

Inasmuch as the radionuclides to be discharged to the water and air will vary directly with operation of the three units, what provision is being made to hold waste water until the flow of the river can accept it without degradation of downstream water quality? Will enough waste water holding capacity be available?

Diversion of 10 percent of the river flow at Browns Ferry. During high flow more dilution water would be available. During periods of low flow ooze deposits are known to accumulate in some of the reservoirs such as Pickwick Lake, where there are presently huge deposits of methylmercury. What effect will the interaction (perhaps synergism) between mercury and radionuclides be? Will not the long-lived fission products accumulate in the deep deposits to be hazardous to the benthic organisms, and to all of the aquatic life when these are resuspended, during period of turnover or high velocity flow?

The estimated kill of ten percent of the plankton could be limiting enough to change the character of the remaining 90% and thus result in production of non-fish-food organisms and large crops of unwanted nuisance organisms. The base of the food chain to the desirable sports fishes of the Tennessee is the plankton.

Calculation and extrapolations based on data from the TVA draft statement would indicate that these reactors could produce waste heat water and fission products that could destroy a most valuable fish recreational resources in the downstream stretches of the Tennessee River, and that the fission products of the Tennessee would join those of the Ohio and Mississippi rivers to further contaminate the Gulf of Mexico, since each year the added long-lived products would be added to those of previous years. As far as I can see there is no data to prove that 30 years of accumulated ⁹⁰strontium would not occur, and that it would not concentrate in food webs to fish and to the people who may wish to eat them.

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