The Radioactive Exchange®

To promote the exchange of views and information on radioactive waste management

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CONGRESSMEN QUESTION DOE AUTHORITY TO STOP 2ND ROUND HLW SITE WORK

By Friday, June 13, a bipartisan group of thirteen "key" members of the U. S. House and Senate is expected to have signed and forwarded a letter to DOE Secretary Herrington stating that the decision to halt the work on the second round repository (See EXCHANGE, Vol. 5, No. 9) "violates the clear statutory mandate of the NWPA [Nuclear Waste Policy Act]". The letter is to be signed by Senate Energy Chairman James McClure, House Interior Chairman Morris Udall, Senators Laxalt, Domenici, Simpson, Symms, Daniel Evans, Gramm, Hecht, Gorton, Bennett Johnston, and Lloyd Bentson and Representative Morrison. It points out that the Act, including the provisions for a second repository, struck a "delicate and carefully considered balance," and warns the Secretary that his "decision to postpone indefinitely the Department's site specific work on the second repository program could destroy the delicate balance and might ultimately lead to an erosion of the technical balance and political compromise that was so essential to enactment of the Act in the first place."

(See **2nd Round** in **the HLW Focus**)

SC ADOPTS BARNWELL SITE USE RULES ALLOWS INVOICING OF SURCHARGES

On the very last day of their session (June 5), the South Carolina Legislature approved legislation that gives the Department of Health and Environmental Control (DHEC) the authority to carry out the State's responsbilities and "powers" as provided in the Low-Level Radioactive Waste Policy Amendments Act of 1985 (LLRWPAA), but does not provide the agency any discretion to allow generators in regions or states not a compliance to continue to use the South Carolina facility as was possible under the provisions of the LLRWPAA. However, generators, waste processors and brokers will be pleased to learn that the bill will allow for the site operator -- Chem Nuclear -- to invoice out-of-region users for the surcharge set in the LLRWPAA, rather than require payment upon receipt of a waste shipment. (See **Barnwell** pg. 2)

EG&G IDAHO LOW LEVEL WASTE PROGRAM STAFF PROVIDE PENNSYLVANIA STATE OFFICIALS WITH A CRITICAL REVIEW OF SIERRA CLUB COMMENTS ON DIOXIN EMMISIONS FROM LLRW INCINERATOR --- SEE INFORMATION BRIEF INSIDE.

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(Barnwell from pg. 1)

Site Volume Restrictions

The South Carolina bill sets the overall cap on the LLRW that can be accepted at the Barnwell facility for the next seven years at 8.4 million cubic feet. The annual cap is set at 1.2 million cubic feet. This parallels the provisions of the LLRWPAA.

The annual cap is also allowed to be exceeded according to the scheme outlined in the LLRWPAA (i.e., the cap can be increased by 10% after **all** operating sites reach their respective volume caps, or via use of the "emergency allocation" process) and, if in a prior year, the annual cap was not reached. If the annual cap is not achieved in any year the bill provides that the remainder can be "banked" for future use. However, no more than an additional 200,000 cubic feet can be "used" from the bank in any given year.

The legislation sets the total utility allocation at all the currently operating facilities for the seven year period at 11.9 million cubic feet. DHEC has the responsibility of monitoring and setting the allocations at as per the guidelines outlined in the Act.

Site Access

The DHEC is given the sole responsibility for carrying out the provisions of the bill including determining whether states or regions are not in compliance with the milestones specified in the LLRWPAA. The determination would be made by the seven-member DHEC Board. Once it is determined that a region or state is not in compliance, the legislation directs that the Board **must impose the applicable penalties as allowed under the LLRWPAA and deny access.**

Surcharge Payments

Though Washington and Nevada are requiring that surcharges due from generators in unsited regions be paid either prior to or at the time of shipment of waste to their respective facilities, the SC legislature decided to allow payment of the fees to the state by the site operator -- Chem Nuclear -- up to sixty (60) days following receipt of the waste at the site. Chem Nuclear is required to keep the state apprised of any site users that do not pay the surcharge within this period of time. Any generator, who is so identified, is to be denied site access until the surcharge is paid and from that point on will be required to prepay the required fee.

Future Use of Site

Under provisions of the Southeast Compact the Barnwell facility is to "cease" operation as a regional LLRW disposal facility on December 31, 1992. The legislation directs DHEC to prepare a study on the use of the site past this date and also stipulates that any operation of the facility after January 1, 1993 must be approved by the legislature. **

NRC STAFF GIVEN DIRECTION ON MIXED WASTE BY COMMISSION

As a result of the NRC Waste Management staff presentation to the full Commission on possible alternative actions NRC could take to deal with the ongoing jurisdictional conflict with EPA over "mixed waste" (hazardous and radioactive) (SECY-86-142, See EXCHANGE, Vol. 5, No. 8) the Commission is now requesting further staff work including an analysis of NRC's authority to temporarily prohibit the disposal of mixed waste at the currently operating disposal facilities.

The EXCHANGE has learned that a June 5 memo from Commission Secretary Samuel Chilk to Victor Stello the Executive Director for Operations, requests that:

- o The NRC Office of General Counsel and the Executive Legal Director develop a paper for submission to the Commission that analyzes NRC authority to temporarily prohibit the disposal of mixed waste at the currently operating disposal sites and to limit the volume of mixed waste accepted for disposal by requiring the maximum treatment of the waste;

- An analysis of fundamental inconsistencies between RCRA and NRC's Part 61 that cannot be resolved technically be completed. This analysis is to identify the conditions under which RCRA permits migration of hazardous waste from land disposal facilities and alternatives that would allow LLRW sites to meet RCRA requirements;

- The NRC staff meet again with EPA RCRA staff to try to obtain agreement on a course of action to deal with mixed waste. The staff is directed to discuss with EPA the possibility of accelerating the promulgation of EPA mixed waste standards.

According to the schedule stipulated in the memo, the staff effort is to be completed and reviewed by the Commission in early July. **

POSITION AVAILABLE:

The **Illinois Department of Nuclear Safety** is seeking resumes for the position of **Chief Legal Counsel** in their Springfield office. The Department of Nuclear Safety is a cabinet-level state agency. Its programs include: emergency planning and response to radiological accidents; nuclear power plant monitoring; inspection and escort of spent fuel shipments; low-level radioactive waste management; regulation of radioactive materials and x-ray equipment; and, environmental monitoring and radiochemistry. It now has a staff of over 160 people.

The Chief Legal Counsel would serve as legal advisor to the Director and agency staff. Specific duties would include: serving as legal advisor on Departmental policy matters, rules, regulations and procedures; overseeing and managing preparation of legal opinions regarding powers, duties and authority of the Department, and interpretations of state and federal statutes governing activities of the Department; supervising, assigning and reviewing work of a small legal staff performing research and drafting legislation, rules, regulations and contracts; liaison with the Attorney General's Office; substituting for the Director at conferences and meetings; recommending revisions in legislation; drafting and supervising drafting of legislation and amendments and testifying before legislative committees; initiating, coordinating and reviewing investigations and recommending enforcement action to the Director; and, working with outside legal counsel on a variety of administrative and court proceedings.

IDNS is an Equal Opportunity Employer and encourages applications from qualified minority and female candidates. Resume should be sent to: Terry R. Lash, Ph.D., Director, Illinois Department of Nuclear Safety, 1035 Outer Park Drive, Springfield, Illinois 62704. (217) 546-8100.

STATES IN COMPLIANCE WITH LLRWPAA

According to information uncovered as of June 11, three of the five New England states - Maine, Vermont, and Massachusetts that are not in compliance with the July 1, 1986, LLRWPAA milestone -- member of a compact -- have taken the available option under the LLRWPAA of formally notifying the Governors of the states with operating disposal facilities -- NV, WA, SC -- that their respective states are taking action to meet their responsibilities under the Act. As this edition of the Exchange went to print, neither Rhode Island nor New Hampshire had exercised this option. New York, as reported below, is not expected to do so.

Officials from the sited-states are scheduled to discuss which states and-or regions are in compliance with the milestones of the LLRWPAA sometime next week (June 15) via a telephone conference call. **

IN NEW YORK

According to reports this past week there has been some movement toward resolution of the stalemate on the New York LLRW siting bill. The EXCHANGE has learned that key N.Y. Senate members have accepted the concept of requiring permits for the transport of LLRW but no specifics have been agreed to. New York will be out-of-compliance by July 1 if the siting bill does not pass, and if Governor Cuomo elects not to opt to formally notify the sited state Governors certifying that the state will accept responsibility for the disposal of LLRW. As of this date the view is that the Governor will not exercise this certification option. **

IN THE SOUTHEAST

The Southeast Compact Commission will meet on July 14, in Columbia, SC in Room 101 of the Blatt Building in the Capitol Complex to select the next host state for the SE regional LLRW facility. (All firearms are to be checked prior to entry !)

ON THE MOVE

ICF Technology Incorporated has appointed **William N. Hedeman, Jr.**, to its Board of Directors. Hedeman, who currently is of counsel to Beveridge & Diamond, P.C., as well as to Multinational Business Services, Inc,., is the former Deputy Assistant Administrator for Water for the U.S. Environmental Protection Agency (EPA). Previously, he was Director of EPA's Office of Emergency and Remedial Response (1981-85), and Director of EPA's Office of Federal Activities (1979-81).

CALL FOR PAPERS

The Ninth Annual Symposium on **Geotechnical and Geohydrological Aspects of Waste Management** sponsored by Colorado State University, February 2-6 1987, is seeking papers for presentation dealing with geotechnical and geohydrological technology as it is related to the management of all waste materials. Papers can deal with specific topics such as clay liner technology, stability analysis of waste impoundments, or design of monitoring equipment for ground water quality investigations. Subjects including regulatory aspects, social concerns, risk assessment and case histories are also encouraged. Interested contributors must submit a **one-page abstract** by **July 18, 1986** to: Annual Symposium on Waste Management; Geotechnical Engineering Program; Civil Engineering Department, Colorado State University, Fort Collins, Colorado 80523. (303) 491-6081.

The one-page abstract must contain the affiliation, position and addresses of the authors/instructors. Abstracts will be reviewed and authors notified of acceptance by August 22, 1986. Completed papers are required by October 31, 1986. Papers will be presented February 4-6, 1987.

CALL FOR MINI-COURSE PROPOSALS

The University of Colorado Geotechnical Engineering Program is soliciting proposals for mini-courses relating to any specific topic within the waste management industry to be taught in conjunction

with their **Ninth Annual Symposium on Geotechnical and Geohydrological Aspects of Waste Management,** February 2-7, 1987. These mini-courses will be presented Feb. 2 and 3, prior to the Symposium which begins on Feb. 4, 1987. Each mini-course must be designed to be presented in a four-hour time period. Longer courses can be offered as separate four-hour courses. Proposals should include a general description of the course materials, length of course, and maximum number of students. Courses will be selected which transfer the latest information on waste disposal technology to those involved in the industry, and acceptance will be subject to a memorandum of understanding between the instructor and the Symposium Organizing Committee.

Proposal for mini-courses must be submitted by July 18, 1986, include the affiliation and position of the authors-/instructors and their addresses, and **be clearly labeled as a mini-course.** For further information contact: Annual Symposium on Waste Management, Geotechnical Engineering Program, Civil Engineering Department, Colorado State University, Fort Collins, Colorado 80523; (303) 491-6081.

REPORTS OF NOTE (LLRW)

Intact Decommissioning of Nuclear Power Plants: A Dose Asessment (AIF/NESP-034). A report from the Atomic Industrial Forum National Environmental Studies Project, based on a study conducted by Ebasco Services Inc. of New York. This report examines the potential radiological consequences to workers and the public of an approach to the decommissioning of nuclear power plants which differs from the three currently recognized options of immediate dismantlement: "mothballing" followed by dismantlement, and entombment. In "intact" decommissioning, fuel and solid and liquid radioactive wastes are first removed as they would be during the other decommissioning options. All radioactive systems and components within a defined intact decommissioning boundary are then left in place, while structures outside the boundary are removed. Virtually no other preparatory work would be performed. The report concludes that, in the first 100 years, radiation exposure consequences to both the public and to workers would be considerably lower with intact decommissioning than with any of the other options. Beyond that time, the radiation risks would be essentially the same as those calculated for the other recognized decommissioning procedures. Since the study is intended as a preliminary technical and radiological evaluation, no attempt is made to treat costs, although it is to be hoped that the conclusions of the report will prompt both regulators and the nuclear industry to reevaluate the need for the expensive maintenance and security requirments of mothballing and entombment.

Copies of the report are available to non-NESP sponsors and the public through the AIF Publications Office, 7101 Wisconsin Ave., Bethesda, MD 20814. For more information contact Scott Leiper, NESP Project Manager at 301-654-9260.

A Joint DOE/NRC Field Study of Tracer Migration in the Unsaturated Zone; (LA-10575-MS; UC-70B); Los Alamos National Laboratory, Low Alamos, New Mexico 87545. The results of a joint DOE/NRC field experiment to evaluate leaching and transport of solutes in a sandy silt backfill used for shallow land burial operations at Los Alamos are presented for steady-state and unsteady-state flow conditions. The migration of iodide, bromide, and lithium through the backfill material is studied as functions of depth and time and they are compared with one another.

The bromide and iodide tracer data are used to estimate the diffusion coefficient, the tortuosity factor, and dispersivity. These values are used to calculate effective dispersion coefficients for subsequent analyses of the retardation factor and the distribution coefficient for lithium using least squares procedures.

EG&G REVIEW OF "SIERRA CLUB'S COMMENTS" ON DIOXIN EMISSIONS ASSOCIATED WITH LLRW INCINERATION

The following brief contains verbatim excerpts from a review of the Sierra Club's comments on Babcock & Wilcox's Environmental Assessment of the LLRW incineration facility proposed to be located in Parks Township, PA. The review was conducted by the National Low Level Waste Program staff at EG&G Idaho at the request of the state of Pennsylvania. The verbatim "excerpts" published below deal only with the EG&G critique of the Sierra Club's comments regarding dioxin emissions. The complete review addresses all critical Sierra Club comments on the B&W EA prepared as part of the NRC licensing process.

EG&G GENERAL REVIEW COMMENTS

The Sierra Club has ... criticized Babcock and Wilcox's (B&W) EA on the proposed Aerojet Mobile Volume Reduction System incinerator to be located in Parks Township, Pennsylvania, because it does not address the risks associated with the possible release of dioxin from the incinerator. Some experiments have shown dioxins to be extremely toxic to some laboratory animals. Considerable ongoing research is focused on determining the human health effects of dioxin exposure, although it is generally accepted that humans are much less susceptible to the acute toxic of dioxin than are the most susceptible laboratory animals.

Risk assessment for dioxin in airborne incinerator effluent streams is problematic, since (a) human health effects are not well characterized, (b) the chemistry of dioxin formation and destruction is not well understood, and (c) knowledge of the environmental transport and fate of dioxin is incomplete. Regardless of these uncertainties in estimating the actual health risks of dioxin, risk assessment of potential dioxin emissions from municipal waste incinerators has already received a great deal of attention. Municipal waste incinerators were thought to be a potentially significant source of dioxin. These incinerators handle large volumes of wastes containing poly-vinyl chloride, which is a potential source of chlorine for the formation of dioxin. The Fred C. Hart and Associates, Inc. study for the city of New York's municipal incinerator (cited by the Sierra Club) and the EPA's Municipal Incinerator Risk Assessment are examples of the effort which has been directed towards risk assessment for dioxin, and towards resolving the public health issues surrounding the incineration of wastes. The relationship of these studies to the hazard assessment of the proposed B&W-Aerojet incinerator is that dioxin emissions from the combustion of large quantities of solid wastes containing PVC have been evaluated for municipal incinerators and have been determined to represent no significant health impact.

The B&W incinerator, designed and constructed by Aerojet, should be expected to emit much lower levels of dioxins than a municipal incinerator because of its highly efficient off-gas treatment system, and because it was designed to provide combustion conditions suitable for burning hazardous materials. Recent studies indicate that cooling of incinerator off-gas to less than 110°C converts most of the dioxin present in the off-gas to filterable solid particles. The B&W system will cool the off-gas to 110° C before the HEPA filtration system, providing an additional mechanism for removal of any dioxin which may be present in the off-gas. This removal mechanism is independent of combustion efficiency (i.e., the organic chemical destruction factor for the combustion chamber) so that the proposed incinerator has a further advantage over typical municipal incinerators.

RESPONSE TO SPECIFIC SIERRA CLUB COMMENTS ON DIOXIN EMISSIONS

Sierra Club - The incineration of typical LLRW (with high PVC content) will result in release of dioxins, and create a possible health hazard.

Response - In the **general** context of combustion of solid wastes that contain poly-vinyl chloride (PVC), dioxins may be formed during incineration, and do represent a **potential** health and environmental concern. The Sierra Club's comment that dioxins should be addressed in B&W's environmental analysis is valid. However, the Sierra Club is apparently unaware of EPA's risk assessment for dioxins from municipal waste combustion (U.S. EPA 1981).

The EPA evaluated the potential dioxin hazards posed by five municipal incinerators. Five different mathematical models were used to determine an upper limit for cancer risk. EPA concluded that risks to public health from these municipal waste combustors were minimal. Since this study, EPA has also evaluated a sixth incinerator with apparently higher dioxin emissions than for the other five facilities; the Agency also concluded for this case that no significant health hazards result from dioxin emissions (U.S. EPA 1983). At present, neither EPA nor NRC attempts to regulate the potential formation and/or release of dioxins from incinerators processing low-level radioactive waste.

Recently, the New York City Department of Sanitation completed an extensive risk assessment of potential public health impacts associated with predicted dioxin emissions from an incinerator proposed for resource recovery. The facility is designed to handle 3,000 tons of municipal waste each day. It does not have off-gas treatment, but is designed with a high-efficiency fabric filter. Auxiliary burners are provided to maintain minimum combustion chamber temperatures. The risk assessment for this proposed facility is quite extensive (and was cited in the Sierra Club document) and contains a good literature review on health and environmental concern associated with dioxins (Fred C. Hart Associates, Inc. 1984). This risk assessment used worst-case assumptions for three potential pathways of exposure: inhalation, ingestion, and dermal absorption. Health risks were estimated and compared to available standards and guidelines on dioxins. The study concluded that exposures were far below these criteria. It should be pointed out that in order to be conservative, this risk assessment assumed no environmental losses or degradation of dioxins.

The relevance of these studies to the proposed Aerojet incinerator is that dioxin emissions from the combustion of solid wastes containing PVC have been evaluated and determined to represent no significant health impact. The B&W-Aerojet incinerator should be expected to emit even lower levels of dioxin because of off-gas treatment, a charcoal bed, and HEPA filters. Off-gas cooling provided in the Aerojet design has a beneficial effect on dioxin releases. Recent studies indicate that dioxin will be predominantly associated with the solid, particulate phase of the effluent rather than in gaseous form (Teller and Lauber, 1983; Neilsen, et.al., 1985). Off-gas cooling to less than 110^{o} C followed by HEPA filtration is estimated to remove 99% of the dioxin which would be released if the off-gas exited at 220^{o} C.

Sierra Club - The Sierra Club states that very low levels of dioxin - "on the order of a grain of sand in a swimming pool" - can cause devastating health effects.

Response - While this statement could be useful to indicate that dioxin is known to be quite toxic, it can give rise to an erroneous view of how humans may be exposed to dioxin in the environment. The hazard posed by a chemical depends on its mobility and availability to humans as well as its intrinsic toxicity.

The following quote from the Fred C. Hart Associates Inc. study gives a reasonable summary of the current understanding of the environmental fate of dioxin. "Little is known about the actual fate of dioxins in the environment and the data are conflicting. Dioxins are relatively persistent compounds which are comparatively stable to environmental degradation. They have an affinity for binding to soils, sediments, and particulate matter, such as fly ash. Since dioxins are not very water soluble and they bind to soils, they do not migrate substantially either vertically or horizontally. Volatilization from soils through vapor phase transport is dependent on ambient temperature and is thought to be a major removal

pathway. The half-life of dioxin in soil depends on complex environmental conditions and has been reported to range from one-half year up to twelve years. The primary removal mechanism of dioxin from water is through adsorption by sediment or biota, although volatilization and photodegradation may occur to some extent. Polychlorinated dioxins in the atmosphere are present in the particulate-sorbed or vapor phase state. They may be removed from the air by atmospheric deposition or photochemical degradation" (Fred C. Hart Associates, Inc. 1984). A wide variety of natural processes also act to reduce the impact of fly-ash bound dioxin which has settled onto environmental surfaces. Materials in the surface dust layers are considered to be relatively available for ingestion. A modeling study (not based on field measurements) by Thibodeaux and Lipsky (1985) indicates that natural processes (e.g., photolytic degradation, evaporation) can reduce the concentration of dioxin in these surface dust layers by a factor of 10^4 to 10^6 below that of the original flyash/dust fallout.

Little is known about toxic and other health effects of dioxins on humans. Most information is derived from cases of accidental exposure to mixtures of dioxins and it has been difficult to make assessments based on these uncontrolled exposures. A variety of symptoms have been reported (e.g., hair loss, nervous disorders, respiratory problems), but chloracne has been most frequently associated with dioxin exposures in humans. Animal studies indicate that a particular form of dioxin (2, 3, 7, 8 - TCDD) shows considerable variation in toxicity and varying effects among species (Fred C. Hart Associates, Inc. 1984). Chemical and Engineering News (May 27, 1985, p. 41-44) has recently reviewed studies on dioxin in the environment presented at the annual meeting of the American Chemical Society; the review concludes that although more and better data are being considered, controversy still exists regarding the hazard to humans.

Sierra Club - The combustion conditions in the proposed incinerator do not ensure that dioxin releases from the incinerator are negligible, especially taking into account the high PVC content expected for the waste material and the incinerator's batch feed cycle.

Response - Dioxin formation and destruction in waste combustion has been studied for other incinerator facilities. The hazard assessment performed for the NY City Department of Sanitation (cited previously) addresses this problem for municipal waste incineration. Three possible mechanisms for the formation of dioxin from different waste materials were considered:

- "that the compounds (dioxins) are trace components of refuse and do not undergo thermal transformation,
- that the compounds are produced from precursors such as PCBs, chlorophenols, and similar materials,
- that the compounds are formed **de novo** from materials that are unrelated to dioxins, such as PVC and other plastics, petroleum products, chlorocarbons, and inorganic chloride ions."

The conclusion was that all three formation routes are possible, but that actual dioxin release from an incinerator cannot be determined by simply considering the concentration of various materials (such as PVC) in the incoming waste. It is clear that PVC is a potential source of chlorine for formation of dioxin, but the fraction of PVC-derived dioxin generated in an incinerator largely depends upon the operating conditions of that incinerator. The New York City Department of Sanitation report cites a study where "no significant increases in dioxin concentrations (for waste with 0.6% PVC content) over emission levels without added PVC in the waste," were observed in tests of a full scale waste incinerator. Although it is not possible to generalize from this experiment to other situations, these results indicate that there is no simple relationship between PVC content in the incoming waste and dioxin release.

The conditions leading to the destruction of dioxin in combustion are better characterized than are the mechanisms for its generation. The nominal operating conditions for the B&W-Aerojet incinerator are essentially the conditions recommended for destruction of dioxin (Fred C. Hart and Assoc., Inc., 1984; ASME, 1981; Oberacker, 1984).

Sierra Club - The Sierra Club commented that a batch-fed controlled air incinerator such as the proposed B&W incinerator will not burn as evenly as an incinerator with continuous, presized fuel feed. This may lead to incomplete combustion, lower retention times, and an increase in dioxin releases.

Response - Batch loaded incinerators do not burn at an even rate, while incinerators designed for continuous feed with preprocessed, shredded waste do burn at a relatively constant rate. Incinerator manufacturers generally take into account the transient operating characteristics (including the periodic peaks in combustion gas flow) of batch feed incinerators. An incinerator designer might choose either batch feed or continuous feed; there are no compelling reasons to prefer one over the other.

The proposed incinerator is a relatively small scale operation, since the total combustible dry active waste generated in the Northeast is roughly equivalent to the municipal waste generated by a city of 7000 people. The batch feed, controlled air type incinerator is very commonly used in such small applications, without any special considerations for dioxin hazards.

Although Aerojet has not given a rationale for their selection of a batch feed incinerator design, the inherently simpler batch feed system may have some safety advantages over continuous feed designs. The drawbacks associated with use of a shredder are possible generation of dust, increased maintenance, and additional cost. Maintenance on a dusty piece of equipment could increase the risk of worker exposure and facility contamination. **

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REPORTS OF NOTE (LLRW)

Evaluation of the Potential for De-Regulated Disposal of Very Low Level Wastes from Nuclear Power Plants (AIF/NESP-035). A report of the Atomic Industrial Forum National Environmental Studies Project, based on a study performed by General Physics Corporation of Columbia, Maryland. It points out a need to establish, by law, that there are levels of radioactivity so low that they represent an insignificant risk to public health and safety. All materials not exceeding these levels could be considered "beneath regulatory concern" and could be used or disposed of without regard for their radiological properties. The cost of shipping these essentially non-radioactive materials is high, and disposing of them at licensed low-level waste burial sites consumes the limited space at those sites. The result is an increase in costs that are passed on to the consumer, the ratepayer and the taxpayer. Both the NRC and the EPA now expend considerable effort in monitoring activities that have no effect on public health or safety and which divert attention and limited resources from more important matters. Progress has been slow in establishing the regulatory basis for a generic threshold level because of the absence of an adequate data base. This NESP report is an effort to provide that data base by examining several low-level waste streams from nuclear power plants and thoroughly evaluating the benefits, risks and costs of exempting them from the requirements of 10 CFR Parts 20 and 61. The data and analyses presented could be used in support of either a generic rulemaking on low level wastes or a request to NRC for exemption of a particular waste stream. The findings will also provide an important part of the nuclear industry's input to EPA's low level waste standard currently under development as 40 CFR 193.

The report is available to non-NESP sponsors and the public through the AIR Publications at 7101 Wisconsin Avenue, Bethesda, MD 20814, at a cost of $75.00. For more information please contact Scott Leiper, NESP Project Manager, at 301-654-9260.

(2nd Round from pg. 1)
In a directly related but independent action, Texas Senator Lloyd Bentsen wrote Secretary Herrington on June 6 raising similar concerns and also questioning how the Secretary saw a diminishing need for a second repository given the projections of HLW that are expected from the defense program.

Provisions of Act Cited

The June 11 dated letter raises very serious legal questions regarding DOE's presumption of authority relative to work on the second repository, citing provisions of the Act such as Section 112(b)(1)(C) that "requires the Secretary to recommend to the President, not later than January 1989, three sites that the Secretary determines are suitable for site characterization for selection of the second repository." The Secretary is directly told that "the decision on whether to proceed with a second repository is a matter that the Congress, not the Department must ultimately decide." Furthermore, the cosignees emphasize that the Act "does not, by design, give the Department the flexibility to tailor the repository program...based upon [the Secretary's] judgment as to what is economically prudent, what the discharge rate of spent fuel is, or by the progress that [is being made] in siting the first repository."

Legislative Amendments Requested

Following the strongly worded citations that it was only within the jurisdiction of the Congress to decide on the merits of the second round program, the Secretary is requested to "make his views known to Congress" and "promptly submit proposed legislation to modify the Nuclear Waste Policy Act in a manner that will reflect the conclusions that [he has] now reached about the need for and timing of a second repository," or explain in detail how the requirements of the Act regarding a recommendation on a second repository will be made in light of his decision.

The Secretary is also asked to submit to Congress "a detailed memorandum of law setting forth the basis for the Department's decision.

Bentsen Asks About Defense HLW

Senator Bentsen in a June 6 letter to the head of GAO has also requested a ruling on the legality of the DOE decision under the provision of the NWPA. He also wrote Secretary Herrington on the same day asking how the decision to delay work on the second repository could be based on a diminished need for disposal capacity when the volume of defense waste to be disposed of in the commercial repository is now projected to be around 130,000 metric tons of uranium (MTU). This is almost twice the capacity of the first repository which is set by law at 70,000 MTU. **

AN INACCURACY & A REVEALING BIT OF GAME PLAYING ON DOE'S HLW SITE SELECTION

Our further analysis of the site selection documents on the HLW repository siting revealed that our report in the previous edition of the EXCHANGE was inaccurate, but also that DOE did some game-playing on the final ranking of the selections. The article indicated that the multiattribute utility analysis had been used to determine

the initial order of preference for the five sites, and that Hanford had been at the bottom of the initial ordering of all five sites. In fact, the ordering produced by the multiattribute analysis (cited in a section entitled "Initial Order of Preference" in Chapter 5 of DOE/RW-0074, the documentation of the analysis) was itself modified before an initial order of preference was determined. The multi-attribute analysis ranked the sites in the following order: Yucca Mountain, Richton Dome, Deaf Smith, Davis Canyon, and Hanford. The decision document (DOE/S-0048) took into account additional considerations (discussed in EXCHANGE Vol. 5, No. 9) in developing a different initial order of preference of three sites for characterization: Yucca Mountain, Deaf Smith, and Hanford. (Thus the initial order of preference did not include all five of the sites under consideration.) This same order was also used as the final order of preference, since it represented the maximum possible diversity of geohydrologic settings and rock types (the major guidelines to be considered in going from the initial order of preference to the final order.) **

RUSCHE DEFENDS 2ND ROUND HLW SITE DECISION, HANFORD SELECTION

At a June 9, hearing convened by Representative James Weaver (D-OR), Chairman of the Interior Subcommittee on General Oversight, Northwest Power and Forest Management, and intended to focus on the DOE's selection of Hanford as a possible site for the nation's first site HLW repository, Office of Civilian Radioactive Waste management Director (OCRWM), Ben Rusche defended the decision to delay the second round repository program but only admitted to being "part of the decision".

The session, attended by six subcommittee members, five of whom were Republican, was intended to focus on the selection of Hanford as a possible repository site, but, a good deal of time was spent criticizing DOE's decision to delay the second repository program, The members unanimously agreed that the DOE decision was politically and not technically motivated.

Hanford Selection Scrutinized

Chairman James Weaver (D-OR), questioned OCRWM Director Ben Rusche about DOE's decision to select Hanford as one of three sites for characterization despite Hanford's relatively low rankings in the multi-attribute analysis developed by DOE as a decision-making aid. Weaver, Sid Morrison (R-WA) and John Miller (R-WA) noted that Hanford ranked worst of the five sites ranked in expected radiological, worker and public fatalities and in distances for shipping wastes.

Morrison proposed that all five sites be characterized and said he would introduce an amendment to a bill Weaver introduced to effect that change in the program. He testified that analysis of the relative weightings of the Deaf Smith, Texas and Richton Dome, Mississippi sites shows that the decision to pick Deaf Smith and reject Richmond Dome was not technically justified. "It appears to me that the Department has taken information and applied it to their decision rather than making a decision from information," Morrison said. "This appears to be the case at Hanford and it is even more obvious in the decision on a salt site." He said "none of the sites were rejected for technical reasons. The selection of the three sites for characterization was simply made for other reasons."

2nd Round Site Decision Attacked

Representative Barbara Vucanovich (R-NV) and Miller, Larry Craig (R-ID) and John McCain (R-AZ), were severely critical of DOE's decision to delay the second round program. Craig told Rusche "We want answers" why the second repository program was dropped. He further chastized the OCRWM director, saying "We cannot arbitrarily narrow the base and come up with a good site. The process we intended was clear; We spelled it out in the Act."

Representative Cain joined in the criticism, exclaiming, that the second repository decision was based on "reasons other than statistically or factually justified." He said he believed Rusche was not re-

sponsible for the decision but was a messenger, and that Rusche should "carry a message back...that those of us in the West are not going to sit by for a violation of the spirit if not the letter of the law. It's not fair and it's not cost-effective."

Rusche Defends Decisions

Rusche responded to the verbal attacks by saying that "the messenger will carry your message back" but insisted he was a part of and a supporter of the decision. He said it was based on "good management" objectives and that the need for a second repository has diminished since the Nuclear Waste Policy Act was passed.

With respect to criticism of the Hanford decision, Rusche responded that Hanford's apparently poor rankings were due to the fact that economic cost and transportation impacts dominated results. He said DOE agreed with National Academy of Sciences recommendations that cost impacts should not be allowed to dominate decisions, and that "when cost is set aside the ranking order of preference is what we chose." He also stated that the pre-closure fatality rankings are dominated by transportation impacts, but that "if the rock is appropriate, that's a small price to pay."

The OCRWM Director exclaimed that, on a scale of zero to 100, with zero meeting Environmental Protection Agency standards and 100 being a perfect no-release repository performance, all five sites measured 99.79 to 99.99.

Political Decisions

Representative Vucanovich indicated a general concern that DOE decisions appear political and that people in her state believe that because Nevada's Congressional presence is relatively weak in numbers other states will keep getting dropped "and there's going to be only one and it's going to be Nevada." She said she recognizes Rusche is under a lot of pressure and added, "We're also under a lot of pressure." **

HOUSE COMMITTEE OK's $9.6 MILLION FOR SUBSEABED DISPOSAL RESEARCH

In a full committee markup on the Department of Energy Research and Development authorization bill held on June 4, the House Committee on Science and Technology authorized a funding level of $9.6 million for subseabed disposal research. Approval came with acceptance of an amendment adding $6.6 million to the $3 million already approved by the Subcommittee on Energy Research and Production.

The amendment, offered by Representative Stan Lundine (D-NY), restored funding of the program to the minimum level judged to be necessary for effective continued participation in the ongoing international cooperative research program on subseabed disposal. DOE had requested termination of the U.S. part of the international effort for budgetary reasons. (Editors Note: A recently released study completed by the U.S. Congress' Office of Technology Assessment recommended continued funding of the program. (See EXCHANGE Vol. 5 No. 5))

In proposing the amendment, Rep. Lundine argued that it would be imprudent to abandon the subseabed program now, before the expected test of concept feasibility in 1991. The amendment was strongly supported by Representatives Marilyn Lloyd (D-TN), Bart Gordon (D-TN), Sid Morrison (R-WA), and James Traficant (D-OH).

Minimum Amount Needed

Rep. Lundine explained that his amendment, which more than tripled the amount approved by the subcommittee, was needed because it had become clear only after the subcommittee markup that $9-10 million (rather than $3 million) was the minimum amount required for a viable program. Rep. Lloyd, chairman of the subcommittee, agreed with Lundine's statement, and noted that DOE's decision to terminate the program had been based only on budgetary considerations, not technical ones. She stated that if the amendment was approved, she would direct the staff to draft language stating that it is

the Committee's intent to continue support through the demonstration of feasibility, expected in 1991.

Budget Restrictions Raised

Some concern was expressed about the effect of the proposed amendment on the ability to meet the overall limits set by the House budget resolution -- a concern raised about all of the amendments to increase program authorizations that were considered in the markup. In response, Rep. Lundine noted that since DOE's decision to defer the second round repository program would free up about $75 million, adding $6.6 million for the subseabed program made sense both economically and politically. He emphasized, however, that support for subseabed research was not motivated simply by "Not-In-My-Back-Yard sentiments," but by a substantial body of scientific opinion that it may turn out to be the best technical solution to the high-level waste disposal problem.

The only opposition to the subseabed research program per se was expressed by Rep. Joe Barton (R-TX). He argued that DOE had already considered subseabed disposal as an option among many others before deciding to pursue land-based geologic repositories, and that the Committee should not fund any further research on the subject unless the Department requested it. He also raised questions about its technical feasibility (in particular, retrievability of emplaced waste) and its political acceptability to coastal states. Rep. Traficant replied that the reason for continuing the program was precisely to answer the remaining questions about subseabed disposal, and pointed out that if the research was deferred, we would never know the answers. **

WASHINGTON STATE SEEKS EXPERTISE ON RAD EFFECTS STUDY

Following DOE's June 4 announcement that it will fund a study of historical records that document radionuclide releases from the nuclear weapons facilities located on the Hanford Reservation, the State of Washington is now seeking recommendations on individuals with scientific expertise for possible membership in a Peer Review Panel, that will oversee the effort. The study is of particular significance since Hanford has been selected as one of the three possible sites for the HLW repository. DOE, which had initially balked at providing funds, is providing the state with a $100,000 grant.

The Center for Disease Control, which had already been requested to conduct a study of the relationship between disease and radiation exposure in the Hanford region and has started work with the state and resident Indian Tribes, will also use the available data in a related independent effort.

Background on Study Effort

On February 27, 1986, the U.S. Department of Energy (DOE) released over 19,000 pages of previously classified information concerning historic radionuclide releases from the nuclear weapons facilities at Hanford. The information indicated that over the 25 year period from 1944 to 1969, as much as 1.1 million curies of iodine 131, together with lesser amounts of other radionuclides, were released into the atmosphere. Significant releases of radionuclides to the Columbia River were also documented. Faced with this information the citizens of the Pacific Northwest expressed outrage over the magnitude of the releases, the reasons for the releases, and the security procedures which would not allow release of health related data. Local residents and residents living downstream along the Columbia River voiced their particular concern about possible delayed health effects from the radionuclides that entered the environment and the food chain during this early period.

In response to the public reaction and the necessity to ascertain any adverse effects to the general public due to these radionuclide releases Governor Gardner of Washington and Governor Atiyeh of Oregon asked the Washington State Nuclear Waste Board to form the Hanford Historical Documents Review Committee to conduct a thorough, unbiased, and technically sound analysis of the documents. Funding was sought from the DOE.

Center for Disease Control Effort

The Center for Disease Control, together with the states of Washington and Oregon, plus the Yakima, Nez Perce and Umatilla Indian tribes, is assembling a panel of experts to generally review Hanford exposures over time, review epidemiological studies performed to date, and determine if further studies are necessary. The scope of this study is oriented toward a general understanding of health impacts from Hanford operations and to determine if more epidemiological studies or added environmental monitoring are necessary. A panel of experts with diverse backgrounds in epidemiology, health physics and radiation ecology is tentatively scheduled to meet in Richland, Washington in late September.

Historical Documents Review

The Historical Documents Review Committee made up of representatives of the states of Washington and Oregon and the affected Indian Tribes will evaluate in detail the past, present, and possible future environmental impacts of the early releases, determine any associated health effects, and make recommendations to the Governors. This Committee is to select a contractor by the end of June to review the historic data, identify gaps in the data, and identify releases which are of concern.

The Peer Review Panel of scientists with backgrounds in radio or nuclear chemistry, fuel cycle engineering or chemistry, geochemistry or soil chemistry, radiation health physics, radiation monitoring, and epidemiology is to review the contractor's work and then recommend the further studies needed to determine environmental and health effects. The study will be oriented toward an in-depth understanding of the environmental and health consequences of the historic releases.

The Committee is now accepting nominations for nationally-recognized experts for the Peer Review Panel. Recommendations should be forwarded to: Royston H. Filby, Chairman, Hanford Historical Documents Review Committee, Washington State University, Pullman, WA 99164-1300. For more information contact Terry Husseman at (206) 459-6670. **

REPORTS OF NOTE (HLW)

A Feasibility Study Using Hypothesis Testing to Demonstrate Containment of Radionuclides Within Waste Packages (BMI/ONWI-599) Office of Nuclear Waste Isolation, Battelle Memorial Institute, 505 King Avenue, Columbus, OH 43201-2693. The purpose of this report is to apply methods of statistical hypothesis testing to demonstrate the performance of containers of radioactive waste. The approach involves modeling the failure times of waste containers using Weibull distributions, making strong assumptions about the parameters. A specific objective is to apply methods of statistical hypothesis testing to determine the number of container tests that must be performed in order to control the probability of arriving at the wrong conclusions. An algorithm to determine the required number of containers to be tested with the acceptable number of failures is derived as a function of the distribution parameters, stated probabilities, and the desired waste containment life. Using a set of reference values for the input parameters, sample sizes of containers to be tested are calculated for demonstration purposes. These sample sizes are found to be excessively large, indicating that this hypothesis-testing framework does not provide a feasible approach for demonstrating satisfactory performance of waste packages for exceptionallly long time periods. Copies of this report are available from NTIS, Dept. of Commerce, 5285 Port Royal Rd., Springfield, VA 22161.

Calendar

June

15-20 Meeting: American Nuclear Society Annual Meeting; MGM Grand, Reno, NV; Spons: ANS; Contact: ANS Meeting Dept. (312) 352-6611.

16 **Hearing: Senate Energy & Natural Resource Subcommittee; Chairman Sen. Domenici; DOE HLW Site Selection & 2nd Round decision; Witnesses to include OCRWM Director Rusche, state officials; Contact: Marilyn Meigs (202) 224-4971.**

19 **Annual Meeting: Central Interstate Low-Level Radioactive Waste Compact Commission, Park Suite Hotel, Oklahoma City, Oklahoma; 8:30 am. Contact: 404 266-0209 or (404) 261-7114.**

20 **Meeting: Rocky Mt. Compact Board, Jackson Hole, Wyoming; Contact: (303) 825-1912.**

24 **Annual Meeting: Midwest Interstate Low-Level Radioactive Waste Commission, The Great Southern Hotel, 310 South High Street, Columbus, OH; 9:30 am - 4:00 pm; Contact: Richard Paton or Susan Olsson (612) 293-0126.**

July

14 **Meeting: Southeast Compact Commission; Blatt Building, 1105 Pendleton St., Room 101, Columbia, SC, 9:00 am; Contact: Kathryn Visocki (919) 781-7152.**

17 **Meeting: Central Midwest Compact Commission, Springfield, Illinois; Contact: (217) 546-8100.**

20-23 Conference: ASME/ANS Bi-Annual Nuclear Power Conference, Safe and Reliable Nuclear Power Plants; Philadelphia, PA.; Spons: American Society of Mechanical Engineers, American Nuclear Society; Contact: Dave Ciarlone, Philadelphia Electric Co., 2301 Market Street, Phila, PA 19101, (215) 841-4807.

22 **Meeting: Northwest Interstate Compact Committee; Shee Atika Lodge, Sitka, Alaska; 9:30 am to 3:30 pm. Contact: Terry Husseman (206) 459-6670.**

22-23 Seminar: Packaging and Transportation of Radioactive Waste Material; Louisville, KY; Spons.: U.S. Ecology; Regis: $425; Contact: Peggy Thompson, (800) 626-5334.

August

September

7-10 Conference: Second International Conference on Radioactive Waste Management; Winnipeg Convention Centre, Winnipeg, Manitoba, Canada; Spons.: Canadian Nuclear Society; Co-Spons.: American Nuclear Society; Contact: D. D. Shipler, NUS Corporation - (803) 649-7963; Dr. T.S. Drolet, 2700 Lakeshore Road West, Mississauga, Ontario, Canada, L5J 1K3; (416) 823-6654, TLX: 06-982333 or Eva Rosinger, Canadian Nuclear Society, 111 Elizabeth St., Toronto, Ont., Canada, Cable: 0623741, CAUCA.

14-18 International Conference: Low- , Intermediate-, and High-Level Waste Management, Decontamination and Decommissioning; Hilton, Niagara Falls, NY; Spons.: ANS; Contact: John L. Knabenschuh, West Valley Nuclear Service, Box 191, West Valley, NY 14075, (716) 942-4295; TLX: 812390, or ANS Meetings Dept. (312) 352-6611.

23-25 Seminar: Packaging and Transportation of Radioactive Waste Material; Richland, WA; Spons: US Ecology; Regis: $525; Contact: Peggy Thompson, (800) 626-5334.

October

1-3 Conference: HAZ MAT Trans EXPO Safety Conference; Spons: Hazardous Materials Advisory Council (HMAC) and the American Trucking Assoc.; Meadowlands, NJ; Contact: Gail Stanton (202) 783-7460.

5-8 Workshop: Radiation Issues; Boston, MA; Spons: Atomic Industrial Forum, Inc.; Contact: AIF (301) 654-9260.

19-22 Meeting: The High Level Waste Business--Transportation, Storage and Disposal; Charleston, SC; Spons: Atomic Industrial Forum, Inc.; Contact: AIF (301) 654-9260.

November

16-21 Meeting: American Nuclear Society Winter Meeting, Sheraton Hotel, Washington, D.C.; Spons: ANS; Technical Program Chairman, David L. Balck, Westinghouse, 1801 K Street, N.W. - 9th Floor, Washington, D.C. 20006 (202) 833-5083; Contact: ANS Meetings Dept. (312) 352-6611.

December

2-3 Seminar: Packaging and Transportation of Radioactive Waste Material; Raleigh, NC; Spons: US Ecology; Regis: $425; Contact: Peggy Thompson, (800) 626-5334.

(Changes from previous calendar in bold print)

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