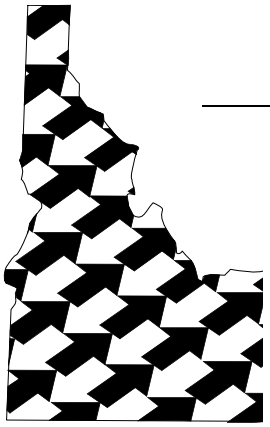
Citizens Advisory Board

Idaho National Engineering and Environmental Laboratory



INEEL CAB Recommendation #63

September 14, 1999

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Dear Ladies and Gentlemen:

NOTE: The Site-Specific Advisory Board (SSAB) for the Idaho National Engineering and Environmental Laboratory (INEEL), also known as the INEEL Citizens Advisory Board (CAB), is a local advisory committee chartered under the Department of Energy's (DOE) Environmental Management SSAB Federal Advisory Committee Act Charter.

The Idaho National Engineering and Environmental Laboratory (INEEL) Citizens Advisory Board (CAB) believes that the standards used to determine the need for remediation of groundwater are unreasonably conservative. We further believe that attempts to meet those standards result in vast expenditures on heroic cleanup efforts that do not result in greater protection of human health or the environment.

The INEEL CAB has reviewed Proposed Plans for various Waste Area Groups (WAGs) at the INEEL and the cost estimates presented in those documents. The requirement for remediation of radionuclide contamination in groundwater derives from rules promulgated by the U.S. Environmental Protection Agency (EPA). The standards limit radioactivity in drinking water; because the Snake River Plain Aquifer underlying the INEEL is a sole-source aquifer, EPA's drinking water standards apply. Remedial efforts are thus designed to reduce the level of radionuclides to below the relevant EPA standards for drinking water.

For example, we recently reviewed the Proposed Plan for WAG 3 at the INEEL (the Idaho Nuclear Technology and Engineering Center [INTEC]). One source area at WAG 3 involves radionuclide contamination (Tritium, Strontium-90, and Iodine-129 [I-129]) in the Snake River Plain aquifer that resulted from historic waste disposal practices at the Idaho Chemical Processing Plant injection well. Four remedial alternatives were evaluated in the Proposed Plan, three of which would not reduce the I-129 to below the EPA's standard. The only alternative that would allow removal of the I-129 (if it could be implemented effectively) would involve a pump-and-treat strategy. The cost estimate for that alternative was $787.9 million—or $747.9 million higher than the next most costly alternative, which was estimated at $39.8 million.

Contact with other advisory boards has been attempted in an effort to better understand the scope of the problem and the associated costs.

These huge costs are in large part due to the standards imposed by the EPA, yet there is no scientific basis for these standards. The current drinking water standards (established in 1976) were derived from the *National Bureau of Standards Handbook 69* (1963), which used conversion factors from the International Commission on Radiological Protection's (ICRP) *Report 2* (1959).

An attempt was made to revise the standards in 1991. Because the proposed new standards were even more protective than those already on the books were, that attempt was dropped following widespread criticism. Many critics disputed the rationale for lowering the allowable exposure doses without concern for costs or for health risks to workers that might be exposed during remedial actions, particularly given the lack of scientific evidence to support the need for greater protection. A partial list of those opposed to lowering the standards at that time follows:

- U.S. Department of Health and Human Services
- National Institutes of Health
- U.S. Food and Drug Administration
- Nuclear Regulatory Commission
- Indian Health Service
- Scientific Advisory Board for the EPA
- Office of Management and Budget
- U.S. Department of Energy

Current restrictions limit radioactivity in drinking water to 0.004 rem per year (based on an assumption that an individual would consume two liters of contaminated water per day). Under this standard, the lifetime doses for 70 exposure years would be 0.28 rem. The INEEL CAB has been told that new standards are due in November of 1999 and that they are likely to be even more restrictive than current standards. Meeting those stricter standards will undoubtedly result in increased costs of remediation.

Current law allows no changes in the standards that are applied to drinking water that would result in an increase in health hazards. The EPA bases its assumptions about the health hazards posed by contamination on calculations derived from a model of radiation exposure that is known as the "linear, no threshold" model. There is no documented evidence in humans to support use of this model. The lowest acute dose that produces carcinogenic effects in humans is 5 rem for children and 10 rem for adults. The lowest dose known to cause chronic effects is essentially double that level at 10 rem for children and 20 rem for adults.

The linear, no threshold concept is outmoded in view of current knowledge. Evidence from thousands of human observations at nuclear bomb sites, nuclear test sites, Chernobyl, Three Mile Island, nuclear power plants, manufacturing plants, laboratories handling radioactive materials, exposure during medical diagnostic or therapeutic procedures, and population surveys of workers in nuclear weapons production sites show that the model is not accurate. Many studies are ongoing.

The current standards limit exposure to a level that is $1/1250^{th}$ of the minimum acute dose (and $1/2500^{th}$ of the chronic dose) that has a measurable effect on human health. There is evidence that low dose radiation exposure may even prolong life. Indeed, several scientific groups have adopted the position that "there is insufficient scientific evidence to support the use of the linear, no threshold hypothesis in the projection of the health effects of low-level radiation." The groups that have endorsed this viewpoint include:

- American Nuclear Society
- Health Physics Society
- International Nuclear Societies Council
- French Academy of Science
- Advisory Committee on Nuclear Waste of the U.S. Nuclear Regulatory Commission

The International Commission on Radiation Protection and National Council on Radiation Protection and Measurements use a different approach in setting acceptable risk levels. These nationally and internationally known organizations have recommended an annual dose of 0.1 rem per year for the general public (exclusive of doses received during medical procedures). This suggested standard is 25 times the current EPA standard for a maximum yearly dose.

We respectfully submit this letter as INEEL CAB Recommendation #63. It was reached through consensus at the September 1999 meeting of the full CAB.

The INEEL CAB recommends against any increase in the standards for remediation. As we have described in this letter, the current standards appear to be adequate to protect human health and the environment, and may be unnecessarily restrictive. Any increase in the standards would increase the costs of cleanup and the hazards to workers. The INEEL CAB also recommends reevaluation of the standards used for remediation of radionuclides based on current scientific evidence, and adjustments accordingly.

Sincerely,

Chuck Rice
Chair, INEEL CAB

cc: Dean Mahoney, INEEL CAB Environmental Restoration Committee
President Bill Clinton
Idaho Governor Dirk Kempthorne
U.S. Senator Larry Craig
U.S. Senator Mike Crapo
U.S. Senator John Chafee, Chair, Senate Environmental and Public Works Committee

U.S. Representative Mike Simpson
U.S. Representative Helen Chenowith
U.S. Representative Michael Bilrakis, Chair, House Health & Environmental Protection Subcommittee
Carol Browner, Administrator, U.S. Environmental Protection Agency
Charles C. Clark, Regional Administrator, U.S. Environmental Protection Agency, Region X
Steve Allred, Director, Idaho Division of Environmental Quality
Martha Crosland, DOE-HQ
Fred Butterfield, DOE-HQ
Gerald Bowman, DOE-ID
Laird Noh, Chair, Idaho Senate Resources and Conservation Committee
Jack Barraclough, Chair, Idaho House of Representatives Environmental Affairs Committee
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Kathleen Trever, State of Idaho INEEL Oversight
Wayne Pierre, U.S. Environmental Protection Agency Region X