



COMMUNITY SAFETY DEPARTMENT
OFFICE OF RESEARCH & OCCUPATIONAL SAFETY
LOS ANGELES, CALIFORNIA 90024

August 21, 1984

James K. Asselstine
Commissioner
U.S. Nuclear Regulatory Commission
Washington, D.C., 20555

Dear Commissioner Asselstine:

Enclosed is a letter which I wrote recently to the Secretary of the Commission expressing my opinion on the HEU to LEU conversion issue. I feel the matter is an important one and wanted to bring it to your attention directly.

Thank you for your consideration of this issue.

Sincerely,

A handwritten signature in cursive script that reads "Walter F. Wegst".

Walter F. Wegst, Ph.D.
Director, Research and
Occupational Safety

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COMMUNITY SAFETY DEPARTMENT
OFFICE OF RESEARCH & OCCUPATIONAL SAFETY
LOS ANGELES, CALIFORNIA 90024

August 9, 1984

Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, D.C., 20555
Attn: Docketing and Service Branch

Re: Limiting the Use of Highly Enriched Uranium in Domestic Research
and Test Reactors

Dear Sirs:

The majority of HEU in U.S. research reactors is in the form of uranium oxide or uranium/aluminum alloy. In all cases, the weight percentage of uranium in the fuel is so low that it would be impossible to make a fast critical assembly (i.e. a weapon) without using hundreds or thousands of pounds of the reactor fuel. In fact, I would guess that there isn't enough HEU research reactor fuel, of any single type, in existence to make a fast critical mass.

Therefore, in order to use such fuel for devious (i.e. terrorist) purposes, the HEU would have to be separated from the base fuel material. While such separation is certainly not impossible, it is difficult and potentially quite dangerous. This is particularly true, in light of the fact that most of the HEU research reactor fuel is in operating reactors and hence is highly radioactive. The theft, transportation, and subsequent refinement of such fuel would be very difficult and rather hazardous to the thieves.

In addition, unless very heavy shielding and sophisticated handling equipment were used the location of such highly radioactive material would be relatively easy to locate.

I also have to question whether there have been any credible threats or attempts to divert HEU reactor fuel? I suspect not (since it isn't really a very attractive target), and hence I suspect that this proposed rule is due to either the paranoia of a few highly placed persons or their political response to unfounded, sensationalistic claims that have received a lot of media coverage.

Finally, I have to point out that it is incredibly naive to think that because the U.S. reduces the use of HEU fuel, that other countries

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would do likewise. The U.S. ban on power reactor fuel reprocessing (to reduce the flow of plutonium in commerce) has not deterred any other country. The U.S. imposed restrictions on using research reactors supplied to foreign countries for plutonium production are a joke and country after country have ignored such restrictions. The U.S. attempts to limit the development of new, cheaper isotope separation technologies (e.g. West German centrifuge technology) are ignored. In view of the failure of all past unilateral actions taken by the U.S. to control fissionable material, it is more than naive, it is stupid to think the conversion of U.S. research reactors to LEU would have any affect on other countries.

The conversion from HEU to LEU appears to have little if any assured benefit, but it certainly would have a very high cost. The cost is not so much in dollars and manhours (though those costs would be quite high), but in the certain loss of many research reactors. Many University research reactors that are used primarily for teaching would shutdown if they were required to expend any money or manhours to convert to LEU fuel. The University people I know, see no benefit to such a conversion, and hence any cost to them is too high. The U.S. would thus lose a significant fraction of its teaching, training, and research capability in the nuclear energy field, definitely a high price to pay for an unrealistic expectation of an uncertain benefit.

If there is classified intelligence information which indicates that there is a realistic potential for diversion of unirradiated HEU research reactor fuel, then perhaps the NRC or DOE should be considerably more restrictive on both the amount of fresh fuel a research reactor can have in storage and on the shipping regulations covering such fuel. In the absence of any indication of a realistic threat of diversion, I don't think the public testimony of those folks who support HEU to LEU conversion is at all convincing and I urge the NRC to reconsider this proposed rule.

Very Truly Yours,

Walter F. Wegst, Ph.D
Director, Research and
Occupational Safety