Technology

The Nuclear Regulatory Commission (NRC) may soon require universities to remove all unused high enrichment uranium (HEU) fuel, according to an August issue of Nuclear News. The commission is concerned that terrorists could steal enough HEU fuel to make a bomb. In July of 1984, the NRC issued a Proposed Rule in the Federal Register requiring research reactors to convert to low enrichment uranium (LEU) fuel "because the reactors could not be used to store the irradiated fuel." This has led to a demonstration that the facility's unique purpose cannot be accomplished without the use of HEU. The NRC has asked its staff to prepare a final rule on the issue.

A group formed by the NRC to study the issue decided that "it may be possible that a nuclear explosion could be made using LEU fuel. This appears, however, to be very difficult." A conversion to LEU could, however, harm US research in nuclear engineering, according to the NRC.

It is unclear when the NRC will make a final decision or how that decision will affect MIT. If the NRC required conversion, it would shut down the MIT reactor, said Lincoln Clark Jr. '63, assistant director of the reactor.

Because of its design, the MIT reactor cannot use LEU, he said. Clark called the terrorist threat a "non-problem." Current NRC rules allow university reactors to store as many as 25 kilograms of HEU, only five of which can be unused.

"We generally said that you'd need at least 15 kilograms of unirradiated unused HEU to make a bomb. I don't think we have any HEU anywhere near 5 kilograms on hand at one time. The amount that terrorists could steal might be enough to make a small bomb in your neighborhood, but not a weapon," Clark added.

It's in the reactors, he said. The NRC order may only affect universities in the United States standing in the field of nuclear research. The group recommended that the federal government pay for the conversion because the costs would be so high that many university reactors would otherwise be shut down. "If you're going to put a liability on institutions through taxation, you might as well pay for it," Clark said.

Clark was a member of the MIT Study Group, which the NRC created to assess how conversion would affect universities. The group found that MIT's and Missouri-Columbia reactors are so designed that they cannot convert to LEU with existing technology.

The Department of Energy (DOE) is trying to develop new low enrichment fuels that would provide the high neutron flux necessary for MIT and Missouri-Columbia. "By 1989, the DOE may have developed a fuel that would make it possible to convert. If that happened, MIT would have no objections to converting," Clark said.

Clark said it was reasonable for the NRC to ask universities to minimize stored HEU. "To me, that makes sense to get the inventories down to low levels to prevent anyone from trying to swipe it," Clark said.

The LEU Study Group warned that requiring all universities to convert might harm the United States standing in the field of nuclear research. "We're affecting less than ten percent of all HEU fuel in the United States," Clark said. "It's not a problem." Todreas said that if the NRC required conversion, the cost of conversion would range from Bach to Britten — all at extraordinary discount prices.

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