DOCKET NUMBER
PROPOSED RULE PR-60 (51FR 22288)

ECOLOGY/ATE
BOX 621

July 23 -86

DOCKETED
USN

Re: Proposed Rule
Fed Register
June 19-86, p 22288
Disposal of HLW

E Nemethy, Sec'y

Sec'y - NRC
Wash, DC 20555

'86 JUL 25 P2:52

OFFICE OF SECRETARY
DOCKETING & SERVICE BRANCH

ATT: DOCKETING & SERVICE BRANCH

Gentlemen =

(For info, enclosed are some news items from our clip files from 1979, 80, 83 re: experimental programs for containing and treating atomic wastes, and for removing plutonium from living tissues)

This proposed rule sheds new light on the atomic industry's long-time claim: "Waste disposal? No problem! The technology exists - it's just a matter of putting it to use..."

This one is so loaded with qualifiers it makes all those "reasonable assurances" look about as substantial as soap bubbles. (And it's written in the usual unspeakably murky prose)

1 - For example: P 22289, col 3: "The engineered barriers of a repository will, in many cases, be instrumental in achieving compliance..." Fine - now what about all the other cases?

2 - P 22299, Sec 60.112(a) speaks of system performance for 10,000 years after permanent closure.

At Sec 60.112(b), you've lowered the ante to 1000 years.

Finally, Sec 60.114 (if we interpret this triple-talk correctly) says you won't require active or passive institutional controls after 100 years. Which apparently means there will be no access control, maintenance, remedial actions, controlling or cleaning up releases, or monitoring after 100 years (?)

The second sentence of 60.114 beginning with "However..." is a minor classic of contrived confusion, with the true intent effectively camouflaged.

HOW ON EARTH DO YOU EXPECT TO GET RATIONAL COMMENTS ON YOUR PROPOSALS WHEN YOU PROSTITUTE THE LANGUAGE IN THIS WAY?

3 - P 22299, Sec 60.112(c): Here, you discuss permissible radionuclide levels in drinking water averaged over any year.

This has a strong resemblance to the "Man-Rem" ploy, where the lethal dose absorbed by some poor devil is neatly averaged-out by someone who's rec'd little or none.

And why do you intend to exclude radon from the radionuclides in drinking water?

And if the annual radionuclide concentrations in a "special source" of drinking water (which may be supplying "thousands of persons") already exceed the limits of para (c)(1), why do you even consider building a repository there?

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att: D.J. Fehringer, 62355

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4 - P 22293, bottom of col 1: What, exactly, is meant by this piece of high-flown nonsense: "...application of the limited societal response capability assumed by the rule..."?

5 - P 22290, near bottom of col 2: Apparently you're still considering emplacement in salt deposits. Do you remember the repository at Lyons, Kansas? We believe around $100 millions were poured down the rathole there. The place was scrapped, after the discovery that nearby flushing operations had riddled the strata with weak spots.

And, somewhere around 1982-3, there was the lake in Louisiana(?) which suddenly vanished down into a salt dome, when some drilling operation had penetrated the dome.

Summing up, we quote the tag-line of a song of the 60s:

"When will they ever learn?
When will they ev-errr learn?"

Ed Nemetz

PSU nuke waste project funded

d/27/79

UNIVERSITY PARK — Scientists t the Pennsylvania State University nd Rockwell Corp. will combine xpertise to begin making and esting an improved artificial aterial capable of immobilizing a rous nuclear wastes forever.

university will be responsible or designing and evaluating dif- erent waste forms, while the Pitt- ourgh-based firm will concentrate n developing a simple, safe, remote- ontrol manufacturing process, ccording to Dr. Rustum Roy, irector of Penn State's Materials esearch Laboratory.

In late August, the Press-Enterprise newspapers published a series of articles exploring new nuclear waste storage technologies developed, in part, from research at Penn State. In the last of those articles, Roy was quoted as saying much further research on the matter will be necessary.

$1.8 million a year

Scientists will develop a ceramic or synthetic mineral waste form, created by Penn State's materials research laboratory, with a $1.8-million-a-year grant from the U.S. Department of Energy.

"We're going to examine improved

(Continued on Page Two)

Drug takes plutonium from tissue

Associated Press

BERKELEY, Calif. — A new chemical that can remove deadly plutonium from living tissue is being considered as a remedy to the problem of stockpiled nuclear reactor wastes, a scientist says.

Kenneth Raymond, a University of California scientist who helped develop the chemical, said the substance is the first advance in treating radiation contamination in 30 years. He added that it may hold the answer to defusing the controversy surrounding plutonium wastes from atomic power plants.

1/16/80

"I think this new chemical, or something very close to it, will prove to be a significant part of the answer" for disposal of wastes from nuclear power plants and weapons, Raymond said last week.

In recent tests, the substance, called LICAM-C, removed 70 percent of the plutonium injected into laboratory mice. And repeated doses could probably remove more with little or no toxic side effect, researchers said.

Plutonium is one of the deadliest substances known. It is a byproduct of and a fuel for nuclear power plants and weapons manufacturing. It is easily absorbed by the body and collects in the lungs, spleen, liver and bone marrow, where the radiation it emits can transform normal cells into cancerous ones.

LICAM-C has the ability to grab individual plutonium ions and engulf them in chemical pinchers, Raymond said.

"Finally we came up with a chemical that binds tightly with plutonium, is nontoxic and (has a) low enough molecular weight to pass through the kidneys so it can be excreted," he said.

Some experimental substances discovered earlier removed plutonium but also removed other important body substances such as iron, calcium and zinc.

Raymond is seeking financing to develop a similar chemical to remove plutonium from radioactive waste, in which the deadly plutonium remains active for thousands of years.

He said he believes that a chemical similar to LICAM-C could be applied to plutonium and remove it in much the same manner as it was removed from living tissue in mice.

Nuke waste

(Continued from Page One)

solid waste forms, in order to solidify liquid and semi-solid nuclear wastes from reprocessed, spent nuclear f " Roy stated in a news release as s ig.

Roy said the scientists, in a foolproof and simple process, will "immobilize nuclear wastes, turning them into a form so inert that no geological event — such as earthquakes, volcanoes and weathering by water and high temperature and pressure — can cause the material to decompose, releasing radioactivity."

Radioactive atoms

The synthetic ceramic material, with properties designed to mimic those of nature's most geologically stable minerals, consists of "radioactive atoms or "radionuclides," chemically immobilized in the artificial ceramic, according to the news release.

For added safety, Roy said, those "minerals" would be encased in a "mineralogically impregnable ortress," a series of metal and artificial mineral barriers also lesigned to withstand geological vents.

In the form of large canisters, the waste packages would be buried 1,000 to 2,000 feet underground, most likely in granite, basalt or shale, far from encroaching groundwater.

Water gravest threat

Water is believed to pose the gravest threat, due to high temperature and pressure which would exist. Two years ago, Penn State scientists discovered that if nuclear wastes were converted into a glass-like solid, groundwater coming into contact with the solids during the first 100 years of burial would break the wastes down in a few weeks to a few months.

Part of the research will be to develop precise tools to compare the artificial mineral with the "glass" form, Roy said, which some nuclear nations have considered the most viable solution, up to now.

Initially, he said, the scientists will work with non-radioactive isotopes of radioactive materials, to determine which synthetic materials are best suited to each type of waste. The wastes vary considerably, Roy added, depending on such things as source (defense or commercial), age and chemical composition.

Boston 118.... Washington 97

Physicist Devises Method to Treat Nuclear Wastes

PHOENIX, Ariz. (AP) — An internationally known physicist claims to have discovered a method for treating radioactive wastes so they can be "reduced to a harmless state in a short period of time."

In a copyrighted interview in Sunday's Arizona Republic, Dr. Radha R. Roy said the process "very roughly can be described as a reversal of phenomena that occur during nuclear fission chain reaction."

A nuclear physicist at Arizona State University in suburban Tempe, Roy said his research has shown the technique is "highly effective" against "any level of radioactivity, from weak to strong."

"The thing that is so encouraging is that the method can cancel radioactivity rapidly enough for it to be of real, practical value in disposing of dangerous wastes in storage and as they are being produced," he said.

One treatment plant Roy has devised could reduce the radioactivity of even the most dangerous wastes with half-lives of 15,000-40,000 years to a level where they would be essentially harmless in about 20 days, he said.

"There remains perhaps as much as a year's work in calculating parameters and preparing data that will be needed for the engineering design of a pilot radioactive waste treatment plant," he said.

Scientists claim breakthrough in containing radioactive waste

8/18/83

STATE COLLEGE (AP) — Pennsylvania State University scientists said Wednesday they have learned to bolster the ability of cement to contain radioactive wastes.

By adding aluminum to tobermorite — a principal compound in dry cement — the researchers said they can give cement better absorption qualities for nuclear waste disposal.

"It's like filling the cement with sponges that will suck up the hazardous waste atoms," said Rustum Roy, director of Penn State's Materials Research Laboratory.

Experts in radioactive wastes said the discovery could help keep low-level nuclear wastes in check. The problem remains finding locations to dispose of the discarded material, they said.

"You can contain it and find suitable soil, but the problem is people don't want you to dispose of it near them," said William Dornsife of the state Department of Environmental Resources. Dornsife works in the department's Bureau of Radiation Protection.

Dornsife was a participant in a 20-month study on nuclear waste disposal released by Penn State on Aug. 8. The study said that sources of low-level radioactive waste "are so far-reaching that no community can claim exclusion."

Typically, cement is used to solidify low-level waste before it is buried in the ground. The waste may come from nuclear power plants, from hospitals or from industries.

According to Roy, clay is often added to the cement used in waste disposal "to sponge up the atoms and hold onto them."