taminate commercial fish with twice the allowable limits for this radionuclide, causing millions of dollars in damage.

Yablokov repeated these concerns during his visit. When asked what he regarded as the most threatening source of nuclear contamination detailed in the report, Yablokov focused on the *Komsomolets*.

But many scientists at last week's meeting argued that the danger from the *Komsomolets* has been exaggerated. Lystsov downplayed the estimate of economic damage, saying, "The margin of error for this analysis is very big. It's a rather theoretical exercise."

Føyn had stronger words for the estimate: "That's just rubbish." The *Komsomolets* holds only a few kilograms of plutonium and is far from the fishing grounds, he says. The submarine also lies at a significant depth, and water from that level does not readily reach the upper layer where fish live, Føyn adds.

Scott W. Fowler of the International Atomic Energy Agency in Monaco presented a rough estimate of the radionuclide threat from the *Komsomolets* and from the dumped reactors in the Kara Sea. Using an extremely simple model of mixing between different ocean basins, Fowler and his colleagues calculated that a gradual leakage of radionuclides would give people far from the dump sites less than 1 percent of the international recommended top dose for cesium-137 over a period of 50 years.

"According to this analysis, it's not a significant contributor to the radiological hazard of the population at large, outside the local area right around those bays [where the reactors were dumped]," says Fowler. His analysis, however, does not examine the effect of a catastrophic leak, nor does it assess the danger to people near the dump sites.

Regardless of whether the submarine and dumped waste truly present a hazard, Føyn and others believe the issue could exact a serious economic toll if the public misunderstands the danger. Norwegians, in particular, have expressed great concern over their fishing industry, and some have even called for an effort to raise the *Komsomolets*, an act that most experts reject outright because of damage to the ship's hull. After planned expeditions to the wreck this summer, Lystsov says Russia will decide whether to leave it alone or to take action by retrieving the torpedoes or sealing the submarine with a polymerizing gel.

As for the nuclear reactors in the Kara Sea, scientists at the meeting said that while the available information suggests they do not represent a grave threat to the greater Arctic, more information is needed to determine any potential future hazard and to decide whether to raise the reactors for storage on land.

"The problem is that people are very concerned about the threat, and so we have to deal with this in a reliable way," says Føyn, who will participate in another joint Russian-Norwegian expedition, which this year has received permission to investigate at least one of the dump sites.

The U.S. Congress has appropriated $10 million to the Defense Department to organize a program for rapidly assessing the threat from the dumped Soviet waste. Louis A. Codispoti of the Office of Naval Research in Arlington, Va., says several expeditions are planned for this summer. One initiative will take measurements off Alaska to determine whether radionuclides are reaching U.S. waters. Another group of U.S. researchers may join a Russian team in the Kara Sea that hopes to collect samples at the dump sites there.

Russian scientists and experts from other countries cautioned that a surge in concern over the dumped waste should not overshadow other pollution problems in Russia that could prove far more threatening, both to Russians and to people across the Arctic. In particular, scientists focused on the Mayak military complex in the southern Urals.

After the Chernobyl accident in 1986, Westerners began learning about a more damaging explosion at Mayak in 1957 and another nuclear accident there a decade later. At the meeting last week, Igor L. Khodakovsky of the Vernadsky Institute of Geochemistry and Analytical Chemistry in Moscow confirmed previous reports that 120 million Ci of radioactive wastes discharged from Mayak have accumulated in the water and sediments of nearby Lake Karachai. That represents nearly 50 times the radioactivity of the waste dumped into the ocean by the Soviet Union.

A subsurface plume of pollution from Lake Karachai is seeping toward the nearby Misheliak River at a rate of 80 meters per year and will soon reach the river, says Khodakovsky. The Mayak facility also has 200,000 Ci stored in a system of reservoirs that are in danger of overflowing an earthen dam, he reported.

Water from this region ultimately drains into the Ob River, which flows north into the Arctic Ocean. As yet, Western scientists know little about how much radionuclide pollution has leaked into the Ob and into the Arctic from this and other military facilities. Lystsov says that Russian scientists are currently investigating the problem but cannot yet issue a report.

Lystsov also warned that the Russian Navy currently lacks the facilities for storing the spent nuclear fuel from their operating vessels and the nuclear reactors from dozens of decommissioned nuclear submarines. —*R. Monastersky*

Feds reluctantly accept Delaney ruling

Last year, a federal court revoked the Environmental Protection Agency's interpretation of the nation's food-additives law — one involving acceptable amounts of known animal carcinogens in processed foods. On May 7, the Agriculture Department, the Food and Drug Administration, and EPA jointly stated they would yield to the court. Thus, EPA will no longer grant pesticide-use exemptions in violation of the Delaney clause.

That clause, a 1958 amendment to the Food, Drug, and Cosmetic Act, prohibits the sale of processed foods containing higher concentrations of carcinogens than existed in the raw ingredients.

Over the past 35 years, improvements in analytical techniques have made possible detection of many toxic agents at concentrations below those believed to constitute health risks. The result, EPA and certain FDA officials have argued, is that science has gone beyond the Delaney clause (SN: 2/15/92, p.105).

At the suggestion of the National Academy of Sciences (SN: 6/6/87, p.361), EPA began coping with the problem in 1988 by offering select exemptions to pesticide-use rules — but only when residues of the potential carcinogens involved appeared to pose a "de minimis" (negligible) health risk.

Last year, the U.S. Court of Appeals for the Ninth Circuit ruled that however reasonable that may be, only Congress can change the law (SN: 7/18/92, p.39).

Because this ruling "leaves us little choice but to deny emergency exemptions to pesticides that would be covered by the Delaney clause," EPA Administrator Carol M. Browner announced last week, her agency will revoke five exemptions it had previously granted for potentially carcinogenic pesticides and will turn down requests for 16 more. However, she added, "We continue to believe that the pesticides affected. . .pose only a negligible risk to public health."

"It is critical for consumers to understand that this is a *legal issue*, not a food safety issue," asserts Jay J. Vroom, president of the National Agricultural Chemicals Association in Washington, D.C. Foods that had been protected with these products "are safe to eat," he maintains.

But EPA may yet get back its de minimis exemptions to the Delaney clause if legislation introduced on April 1 by Reps. Richard H. Lehman (D-Calif.), Thomas J. Bliley Jr. (R-Va.), and J. Roy Rowland (D-Ga.) becomes law. Their bill already has more than 80 bipartisan cosponsors. —*J. Raloff*

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