

Radiation exposure at the Crossroads

In 1946, civilian scientists and 42,000 servicemen took part in military exercises associated with two atmospheric nuclear tests at Bikini Island. As part of Operation Crossroads, they entered a lagoon after the detonations to examine radiation levels and blast damage to target ships. Last year, the Defense Nuclear Agency (DNA) computed the participants' test-related radiation exposures, based on dosimeter readings from the 6,300 who had worn film badges, and found no evidence that overexposures had occurred. But at the request of Sen. Alan Cranston (D-Calif.), the General Accounting Office (GAO) reviewed several issues related to DNA's estimation procedures. In its analysis, just reported, the report says DNA's numbers cannot be trusted.

Among factors that GAO believes contribute to this are:

- badge dosimeters that were unreliable for measuring both external gamma and beta radiation.
- no allowance for inaccuracies attributable to the badge's film, even though DNA acknowledges that badge readings could vary by 30 percent (up or down).
- the high number of unmonitored workers.
- no estimate for exposure through open wounds.
- suspicion that decontamination was inadequate; the earliest mention GAO found of a requirement to shower or change clothes after work at contaminated ships was in procedures issued after the last Crossroads detonation.
- no accounting for film processing and reading inaccuracies. A mid-1950s National Bureau of Standards test found that several laboratories erred by plus-or-minus-100 percent in their reading of film badges similar to those used at Crossroads. Based on that, GAO doubts that "readings performed under harsh Crossroads conditions would have been more accurate than those in laboratories."
- DNA's method for estimating internal exposure, which may have underestimated alpha doses by a factor of 10.
- DNA's faulty assumption that not eating onboard target ships precluded ingestion of radioactive materials.

GAO recommends that DNA revise its estimates of Crossroads exposures to account for these factors because potential errors in the original calculations are not just academic. The Veterans Administration uses DNA's calculations in adjudicating radiation-related disability claims. The Defense Department challenged many of GAO's assertions and recommendations in a 30-page dissent that has been included in the report; the accounting agency counters each with a point-for-point rebuttal.

Chinese nuclear pact signed

The House of Representatives has endorsed a resolution — already passed by the Senate — to permit U.S. exports of nuclear-power technology to China. This "agreement for nuclear cooperation," based on a pact worked out between President Reagan and Chinese officials in Beijing last year, allows U.S. reactor vendors to bid on an estimated \$6 billion in business.

While China's failure to sign the Nuclear Nonproliferation Treaty worries many U.S. lawmakers, compromise language contained in this resolution restricts ultimate congressional approval of any actual exports to certifications by President Reagan that he has established that China will not use the technology for acquiring nuclear weaponry.

Sen. John Glenn (D-Ohio) is hoping to achieve even tougher controls on those exports. The existing resolution makes no provision for actually proving — via traditional nuclear safeguards activities and monitoring — that the Chinese abide by their pledge to use the technology for solely peaceful purposes. Legislation Glenn has introduced would require such safeguards.

Stricter benzene, formaldehyde limits

Permissible workplace exposures to benzene would be cut by 90 percent and allowable exposure to formaldehyde reduced by half to two-thirds, if a new proposal by the Occupational Safety and Health Administration (OSHA) is adopted.

OSHA says the current benzene standard of 10 parts per million (ppm) in air, averaged over eight hours, might result in 44 to 156 leukemia deaths per 1,000 workers exposed at the limit over their occupational lifetime. The new standard would reduce these excess leukemia deaths to between 5 and 20, according to a report on the proposal contained in the Dec. 10 Federal Register. While carcinogenicity data are less certain for formaldehyde exposures, OSHA estimates that halving the current eight-hour standard to 1.5 ppm could drop the cancer risk for career-long work exposure to formaldehyde from perhaps 345 cases per 100,000 to only about 40 cases per 100,000. The current standards were based on the chemicals' irritant properties.

Many professions are exempted from compliance with the new benzene standard, including those that: use or deal in fuels after they are discharged from bulk, wholesale storage; work in oil- and gas-well drilling; or traffic in benzene moved by pipeline or in sealed containers.

Warning labels for drugs with sulfites

More than 1,100 prescription drugs contain sulfites to limit oxygen-mediated changes that might affect potency. However, as many as 10 percent of the nation's asthmatics — 1 million people — may be sulfite-sensitive and suffer life-threatening allergic-type reactions upon exposure to these chemicals (SN: 8/17/85, p. 100). So the Food and Drug Administration (FDA) is proposing that these drugs be labeled with a warning of their potential for triggering severe reactions. Most of the drugs in question are administered intravenously.

Many drug manufacturers have already volunteered to label products that contain the antioxidant. The Washington, D.C.-based Pharmaceutical Manufacturers Association, for example, whose members make the majority of U.S. prescription drugs, told FDA that as of Dec. 1 it expected its members would be listing all inactive ingredients — including sulfites — in the official package insert for oral drugs. Members of the Proprietary Association, also based in Washington, who manufacture between 90 and 95 percent of all over-the-counter drugs sold in the United States, announced a similar measure. While this is useful, FDA contends that simply listing the ingredients is not enough. In fact, the agency notes, the only prescription drug confirmed to have caused a sulfite-mediated allergic reaction listed the ingredient on its label — a listing that was overlooked by the attending health-care provider.

Freshwater wetlands protection upheld

A Dec. 4 Supreme Court ruling has upheld the federal government's right to regulate — even prohibit — development of freshwater wetlands. The case involved a suburban builder in Michigan that attempted to fill in 80 acres of marsh, near a lake, in preparation for construction of a new housing development. The Army Corps of Engineers objected, saying that such land-filling operations required a permit from them. The builder refused, claiming that the Corps — traditionally charged with maintaining navigable waters — had no jurisdiction over these wetlands. But in a unanimous opinion, the court ruled that "the evident breadth of congressional concern for protection of water quality and aquatic ecosystems suggests that it is reasonable for the Corps to interpret the term 'waters' to encompass wetlands adjacent to waters as more conventionally defined."