

levels of contamination occurred. The most serious accident, which occurred in January 1963, resulted from the leakage of radioactive material which had been improperly packaged. The leakage caused part of a truck terminal to be closed for several days for decontamination. This incident involved the shipment of a 13 gallon glass carboy containing 8.4 gms of plutonium and 498 gms of gold chloride in 6 gallons of acidified solution. During transit, plutonium-contaminated liquid leaked from the glass carboy (with a loosely-fitting ceramic stopper) and contaminated several trailers, truck terminals, a number of packages of other materials, and several persons handling the materials. The leakage was detected during routine monitoring of the unloading platform after the shipment was unloaded at its destination. The glass carboy was packed in a wooden box which was marked "this end up". The box also had pallets on its sides, however, and when placed on its side, the material slowly leaked out of the container. The carboy was not surrounded on all sides by an absorbent material sufficient to absorb the entire liquid contents, and therefore, was not in compliance with regulations pertaining to radioactive liquids. Neither was it in compliance with regulations pertaining to the shipment of acids. No personnel injuries resulted from this incident. The cost of decontamination was estimated to be \$27,500.

The worst accident situation one might expect is generally considered to be a high speed collision of a vehicle transporting irradiated fuel with another vehicle transporting a highly flammable liquid, subjecting the shipping cask to an intense fire. To prevent the escape of significant quantities of radioactive material under these conditions, primary reliance is being placed on adequate cask design and fabrication specifications as established in regulatory safety standards. It must be demonstrated that the casks will withstand a set of hypothetical accident conditions which includes a free drop through a distance of 30 feet onto an unyielding horizontal surface, followed by a puncture test consisting of a 40-inch drop onto a 6-inch diameter steel bar, followed by exposure for 30 minutes to a fire having a temperature of 1,475° F., followed by a 24-hour water immersion test.

Question 7. Please provide more detail on other agency employees who have worked or are working within the AEC. Why was this type of arrangement started; how many people are involved; what do they do within the AEC? How is coordination maintained with the parent agency after the people have left the AEC?

Answer. One of the important and unique features of the Commission's operational and research and development activities in the radioactive waste management field has been, and continues to be, the utilization of specialized technical competencies of other federal agencies on a day-to-day direct working assignment basis. From the beginning, it was clearly recognized that the overall problem of safe handling of radioactive waste materials required the competencies of a broad spectrum of scientific and technical disciplines including the various engineering fields, the earth sciences, and the physical, chemical, and biological sciences. Accordingly, AEC funds have been allocated to a number of federal agencies to carry out specific programs in the disposal of radioactive wastes, and the associated environmental studies. Examples of this cooperative effort through the years include:

- (1) U.S. Geological Survey (USGS), in connection with disposal in land and stream environments.
- (2) U.S. Weather Bureau, now Environmental Science Services Administration (ESSA), in relation to gaseous and particulate effluent control.
- (3) U.S. Public Health Service (USPHS), in relation to the disposal in surface streams and sea disposal.
- (4) U.S. Coast and Geodetic Survey, in connection with sea disposal activities and seismologic factors.
- (5) U.S. Fish and Wildlife Service, in connection with sea disposal operations.
- (6) U.S. Bureau of Mines, in relation to R&D on disposal into the lithosphere.

Included in these arrangements is the assignment of technical personnel from these agencies to the AEC installations and offices on a full-time basis to assist in solving waste management problems, and to participate in R&D activities in this area. Examples include the ESSA group at NRTS; USGS group at ORNL and NRTS; the USPHS group at ORNL; and USGS and ESSA technical personnel in AEC Headquarters. Approximately 20 to 25 outside agency personnel have been involved at one time at AEC field installations and Headquarters. While