results in stacking and handling problems, but moreover, the amount of such shielding may be restricted because of floor load limits If large amounts of radiation are to be handled, then shielding hoods, caves, and cave doors should be checked for safety of design

Decontamination facilities should be checked as to their suitability for the intended purposes The method of final or interim storage of radioactive wastes should also be analyzed Designers of such facilities should review the abundant literature

The system by which dry active and liquid active wastes are to be collected should be checked for minimum handling

Records and reports

AEC contractors and licensees must report unusual exposures and incidents involving radiation to the Atomic Energy Commission and must keep records of the exposures of individual employees and of the levels of contamination found around operations * Similar reporting and record keeping is required by some states

Information service

The radiation safety staff may be called upon to give to the supervisory staff and operating personnel technical information and assistance relating to aerosol characteristics, air flow, air cleaning, the toxicity of specific materials, and suitable safeguards for them

Laboratory facilities or services

Analysis service may be purchased from commercial laboratories, as mentioned previously, but in some cases it will be more desirable to set up a laboratory within the company The quality of the service may be checked by "spiking" (unknown to the analyst) samples with known amounts of radionuclides One function of the laboratory would be to make periodic and special bio-assay analyses in order to check for internal exposure of employees Specimens may be obtained from employees, or, in unusual cases, the whole body of the employee may be counted in a special facility containing equipment to measure both quantitatively and qualitatively the internal concentration of gamma emitters.

A monitoring system is needed to detect radioactive materials in effluents from operations.

A special laboratory is needed to analyze for very low-level amounts of radioactivity in samples of air, water, plants, and soil In major atomic energy installations, it is common to analyze samples obtained both on the premises and at distances from the site Any trend in the level of activity found in air, soil, and plant life may then be studied

Employees who work with or near radiation may be issued film badges on a weekly, biweekly, monthly, or quarterly basis, as discussed previously Film badges that have been worn must be picked up and shipped to

*See the AEC *Manual*, 05 Series

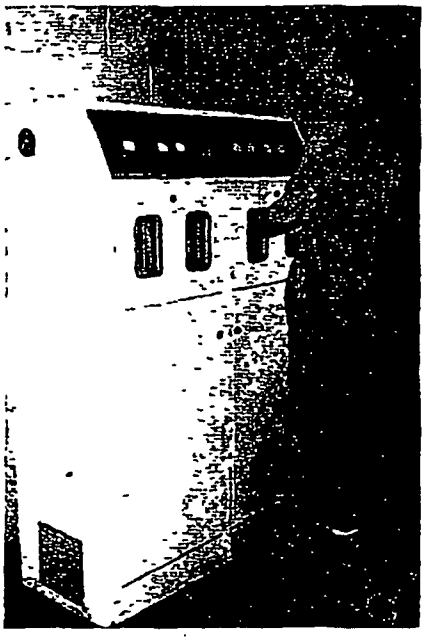


Fig 42-18. Using a hand and foot counter to check for possible beta-gamma contamination. The alpha radiation counting section is on the left

Courtesy Argonne National Laboratory