

14 Suggestions for the Control of Contamination

Contamination control methods are based on the principle of CONTAINMENT.

Zoning

One approach to contamination control is through zoning. Contamination control zones are designed to prevent and control the spread of contamination. A facility could be divided into the following zones:

- Zone 3:** These areas contain radioactive systems and materials that may cause contamination.
- Zone 2:** These areas contain non-radioactive systems, but have potential for contamination as a result of personnel traffic and ventilation flows.
- Zone 1:** These areas do not contain radioactive materials and must not become contaminated (e.g., Administration Building, Administration Annex, Training Center, Construction Stores [all areas, all yard areas outside the inner security fence]).

Unzoned Areas

Certain areas inside the inner security fence may be declared unzoned in order to simplify the movement of people. Unzoned areas should be treated as Zone 1 areas for the purposes of contamination control (no contamination). Contamination monitoring should be mandatory when moving from Zone 2 to the Unzoned Areas.

Protective Clothing

Contamination control starts when you enter the Radiation Area. If personal clothing becomes contaminated, it should not be allowed in Zone 1 or off site without decontamination.

Contaminated Areas (Rubber Areas)

As with zoning, a rubber area is a means of containing a contamination hazard. To build a rubber area, you simply isolate the hazard using rope or barriers, and if necessary, a protective cover on the floor. Provide shoe covers at the point of entry. These shoe covers are put on at the entrance, worn at all times in the rubber area, and removed when leaving. Care should be taken when removing dirty shoe covers so that contamination is not spread beyond the barrier.

If the loose contamination exceeds 1,000 cps (i.e., frisker off scale) in a specific location inside the rubber area, perhaps around dismantled equipment, a rubber change station should be set up. The rubber change station is simply a rubber area within a rubber area. When entering a rubber change area, shoe covers are worn over disposable booties. When leaving, the covers are left in the rubber change area and the disposable booties are used to traverse the rubber area. Frisk yourself carefully when exiting rubber areas.

Other protective equipment should be provided at the entrance to the rubber area as needed, e.g., respirators, disposable coveralls, gloves, frisker, etc.

Beta-Gamma Contamination Control Limit (CCL)

A contamination control limit may be chosen by health physics. This limit should be low enough to represent a minimum health hazard, yet high enough to be detectable with friskers. The table below may be used to insert the plant-specific contamination limits.

Beta-Gamma Contamination Limits^a

	Limit	Reading above Back- ground on Frisker held at 1 cm
Body surfaces, personal clothing, respirators after cleaning		___ cpm
Protective clothing and equipment after cleaning		___ cpm

^aThe alpha CCL is 1/10 of the beta-gamma CCL.

These limits are intended to be for fixed contamination. An instrument, of course, cannot tell the difference between fixed and loose contamination. No loose contamination should be permitted to enter Zone 1. Although practical considerations dictate the necessity of setting a CCL, the intent should be that all materials destined for Zone 1 be free of radioactivity. Any material with fixed detectable radioactivity entering Zone 1 or leaving site should be covered by a Conditional Release Permit.

Whenever loose contamination is found it should be cleaned up immediately or clearly marked.

Resuspension

Under normal conditions a small percentage of loose surface contamination will be resuspended to become an airborne hazard. If contamination areas are established in places where there are high air flows, e.g., near outside doors or near fan exhausts, there may be a significant airborne hazard.

Welding and grinding contaminated materials may cause the fixed contamination to become loose and airborne.

Personal Hygiene

A high standard of personal cleanliness helps to prevent internal contamination. Make an effort to control habits which might cause contamination to enter your mouth (e.g., pencil chewing and nail biting).

Food and Beverages

Food and beverages should not be consumed in Zone 3, Zone 2, or any unzoned areas unless specifically approved by the Station Health Physicist. Most plants do not allow eating in radiation control areas (RCA) regardless of zone status.

Smoking

Smoking should be prohibited in the station except in designated smoking areas. There should be no designated smoking areas in Zone 3. Most plants do not permit smoking in any RCA.

Working with Broken Skin

If your skin is broken from either physical damage or infection, you should report the details to your supervisor. If you are subsequently asked to enter contaminated areas, and if the breaks are obviously minor, you should cover them with tape available in the first-aid boxes. If the breaks are not minor, you should not enter contaminated areas.

If the damaged skin is on your hands, you should also protect your hands with an appropriate pair of gloves.