

RADIOACTIVE COMPOUNDS

This bulletin describes the DuPont recommended cleaning/decontamination procedures for removing radioactive compounds from Corian®.

Removing Radioactive Compounds from Corian®

Summary

Corian® is a nonporous material that is easily cleaned of excessive levels of radioactive contamination. In laboratory tests, surfaces of Corian® contaminated with ^{14}C , ^3H , ^{35}S and ^{32}P radioisotopes were decontaminated to "unrestricted" levels using a Scotch-Brite® abrasive pad and liquid Count-Off™ radioactive decontaminant.* Repeated contamination/decontamination cycles were equally effective.

Test Method

Ten microcurie aliquots of each radioisotope were placed onto the surface of each specimen of Corian® and allowed to dry. Specimens were made of Cameo White and Sierra Dusk Corian®. One set of specimens was cleaned 20 minutes after contamination. A second, duplicate set of specimens was cleaned one week after contamination. The following cleaning process was used for both sets of specimens:

1. Wash surface with Windex®; dry with tissue.
2. Wash surface with 2% solution of Count-Off™; dry with tissue.
3. Rub surface with Scotch-Brite pad, wetted with 2% solution of Count-Off™, to remove surface of Corian®. Dry with tissue.
4. Repeat steps 1 and 3.
5. Repeat step 3, using 220-grit sandpaper instead of Scotch-Brite pad.
6. Repeat step 1.

Note: The surface radioactivity was measured after each of the above cleaning steps, using a "wipe survey" and liquid scintillation counting. Samples contaminated with ^{14}C , ^3H , ^{35}S and ^{32}P were also measured with an open window G.M. tube connected to an "mrad" ratemeter, located 1 cm above the Corian®.

*Count-Off is available from Perkin Elmer Inc. Call 1-800-762-4000, and ask for catalog number GNE9422 for 2.5 liter or GNE9427 for 4x2.5 liter.

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Test Results

The specimens of Corian® were decontaminated to activity levels less than 100 disintegrations per minute (dpm) per 100 cm² of surface area, and less than 0.2 mrad.

Interpretation of Test Results

The U.S. Nuclear Regulatory Commission has issued Guide 8.23, which discusses survey/measuring procedures for radioactively contaminated areas. Page 8.23-8 contains Table 2, which shows recommended contamination limits for surfaces in medical institutions. Based on these limits, the recommended cleaning procedure in this bulletin will decontaminate Corian® to levels considered "unrestricted," that is, directly touchable by institution personnel without any protective equipment.

Recommended Cleaning/Decontamination Procedure

Wearing standard laboratory protective equipment (plastic or rubber gloves, lab coat or smock, safety glasses and a dust mask), the decontamination person should:

1. Survey the work surface to locate all contaminated areas.
2. Rub the contaminated surface with a Scotch-Brite® pad wetted with a 2% solution of Count-Off™ until some of the surface is removed. Dry with tissue.
3. Resurvey the work surface. Continue repeating steps 2 and 3 until contamination levels are below those specified in the NRC license for the work area. When the surface contamination is below license limits, clean the surface using household window cleaner. Wipe dry with tissue or paper towel.
4. Resurvey the work area. Repeat steps 2–4 as appropriate.

Note: Disposal of contaminated cleaning materials should be per NRC Regulation 10 CFR Part 61 and any applicable state or local regulations.

Comments

Although this decontamination procedure is effective, it is the responsibility of the decontaminating operator to ensure that residual surface contamination is below the limits specified in the institution's NRC license and that all applicable rules and regulations are followed.