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Decontamination problems created by hot-cells used  
for the separation of actinium-227 from neutron-irradiated  
radium oxide *carbonate*

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Abstract

The contaminated infrastructure of a large  $\beta$ - $\gamma$  hot-cell of 80 cm thick barite-concrete walls is partly lined with stainless steel and partly with soft steel. Equipped with independent stainless steel alpha-boxes, this infrastructure as a whole has been used during several years as a prototype semi-industrial chemical and ceramical plant for the isolation and production of actinium oxide from neutron-irradiated radium carbonate.

The alpha contamination in the  $\beta$ - $\gamma$  enclosure was initially caused by acidic solutions bearing alpha emitting radioisotopes, due to corrosion of the tubing and the ventilation ducts.

After dismantling of the alpha cells and the tubing by plasma torch the  $\beta$ - $\gamma$  enclosure, temporarily adapted as an  $\alpha$ -enclosure, was still slightly contaminated. Sandblasting has been used as the main decontamination technique. The efficiency of this technique is very pronounced but it creates problems for the ventilation filters.