

ARGONNE'S QUICK AND EFFECTIVE DECONTAMINATION TECHNIQUE



BENEFITS

- Faster than any other decontamination approach
- 70 to 100 percent effective
- Restore basic services quicker, minimize radiation exposure for emergency workers
- Interchangeable equipment, tools, materials
- Skilled workers unnecessary

During any emergency, timing is critical, especially if radioactivity is released. Following an attack with a nuclear “dirty bomb” or scattered radioactivity, the environment would be contaminated. The faster emergency crews decontaminate the area, the better.

Argonne researchers have created a new technique that decontaminates urban areas faster than any other approach. The technology is simple and uses widely available materials and tools to clean and isolate radioactivity quickly, helping to restore basic services and reduce radiation exposure of emergency personnel.

The new system uses a salt solution to wash radioactivity from contaminated hard, porous surfaces such as brick and concrete. The salt traps radionuclides before they deeply penetrate these surfaces. The system then extracts and isolates radioactivity from the waste water, allowing first responders to recycle the water

onsite. The technique works as well on common materials such as glass, metals and plastics, making it a perfect solution for aircraft, train cars, and other vehicles.

Speed is the main benefit of the wash and recovery technique. Like existing decontamination methods, it can remove from 70 to nearly 100 percent of the radioactivity from surfaces, depending on the type of material and contaminant. Yet the technique can accomplish this goal in minutes, not hours or days – without special equipment, personnel, or materials.

DECONTAMINATE IN FOUR STEPS

Argonne’s new technique is a simple four-step plan that any group of first responders can follow:

- **Wash:** Add salt solution to tap water and spray surfaces with firehose. The positively charged solution will kick off positively charged radionuclides, extracting them from surfaces.
- **Contain:** Isolate the contaminated runoff with plastic-lined berms, which first responders can fill with any material – dirt, clay, etc. Use berms to build small pools and line them with clay.
- **Filter:** Pump runoff water into first pool and allow clay to filter water and remove radioactivity. Pump filtered water into second pool. Repeat process until water is clean.
- **Recycle:** Use mobile filtration system to purify water from the last pool. The mobile system separates clay from recycled water. Build an additional pool for the recycled water, which can further decontaminate the area.

FLEXIBILITY WHEN IT COUNTS

In emergency situations, flexibility is as important as speed. That is why first responders can adjust or substitute many pieces of the process.

Emergency workers can, for example, decontaminate vehicles as well as buildings and roads. They can also substitute seawater – or nearly any liquid containing salt – for the salt solution. In addition, there are countless materials from which the berms can be built as well as many mobile filtration systems one can use. Finally, anyone can master the technique – skilled workers are unnecessary.

Argonne's decontamination method has been tested by the Environmental Protection Agency (EPA) and the Denver and Columbus Fire Departments. It is the fastest of the effective decontamination technologies developed at Argonne National Laboratory.

Argonne's technology is patent pending and is available for licensing.



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