

# RESRAD Explained

Hunters Point Naval Shipyard | July 2019



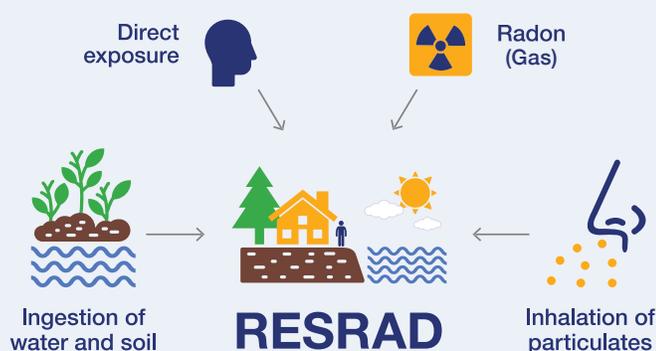
## What is RESRAD?

RESRAD is the most extensively tested, verified and validated tool in the environmental risk assessment and site cleanup field. Developed by Argonne National Laboratory for the U.S. Department of Energy (DOE) to evaluate radiologically contaminated sites, RESRAD is short for “RESidual RADiation.” It estimates the amount of risk from exposure to radioactive material at a site and is then used to develop cleanup goals for contaminated soils or buildings.

DOE and the U.S. Department of Defense, including the Navy Base Realignment and Closure program, have relied on RESRAD for decades to help successfully complete cleanup projects across the country.

RESRAD is also used by regulatory agencies, the risk assessment community and universities in more than 100 countries around the world. This includes the principal U.S. nuclear agency, the Nuclear Regulatory Commission.

## How does it work?



RESRAD uses a pathway analysis method to evaluate radiation exposure and associated risks; it also models how radiation might reach an exposed individual or group.

Dose and risk reports are generated after consideration of nine environmental pathways, including:

- Direct exposure
- Inhalation of particulates and radon
- Ingestion of water and soil

Various exposure scenarios can be developed with RESRAD by using different codes to define the type of radiation source and intended output at a specific site.

## RESRAD and Other Tools

While RESRAD is the primary measurement tool used, the Navy does use others for additional data evaluation to complete the safe cleanup and transfer of property, including land and buildings.

One is the Preliminary Remedial Goal (PRG) Calculator that was developed for use as a screening tool by the U.S. Environmental Protection Agency (EPA). The PRG Calculator assesses concentrations of site contaminants in soil, water and air to identify areas that may warrant further evaluation. The Navy is working with the EPA on using the PRG Calculator to complement the RESRAD tool to evaluate all potential exposure pathways unique to Hunters Point, and develop the most accurate, site-specific evaluation.

## What Experts Say

**“The DOE’s policy is to use RESRAD (or other models meeting the DOE quality assurance requirements) for site-specific and site-relevant risk assessments and determining appropriate cleanup levels.”**

Mark Gilbertson,  
Associate Principal Deputy Assistant Secretary,  
DOE Regulatory and Policy Affairs

**“RESRAD has also been used by the U.S. Environmental Protection Agency (EPA), U.S. Army Corps of Engineers, U.S. Nuclear Regulatory Commission (NRC), industrial firms, universities, and foreign government agencies and institutions.”**

Argonne National Laboratory,  
Environmental Assessment Division

**“The RESRAD code [method] has been used extensively for dose analysis in site cleanups.”**

U.S. Nuclear Regulatory Commission