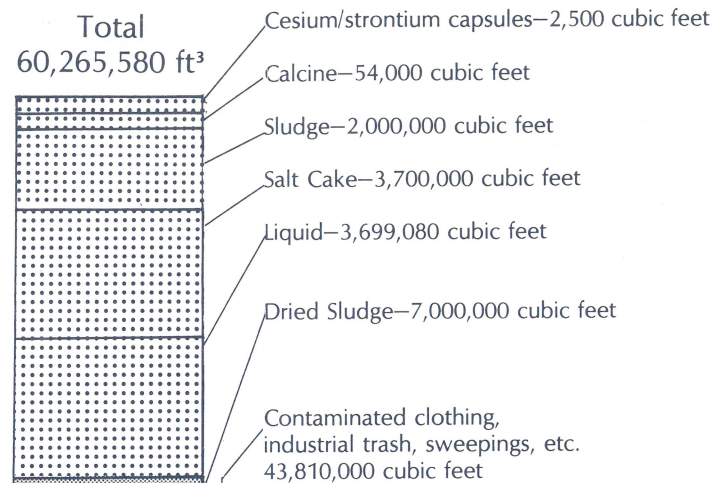


# NUCLEAR WASTES FACT SHEET



America's first nuclear wastes, from which plutonium was extracted for the Nagasaki bomb, were secretly produced by the government at Hanford, Washington in 1944. Since then our military and civilian nuclear programs have combined to create over 76 million cubic feet of high and low-level wastes and over 140 million tons of uranium mine and mill tailings.<sup>1</sup> The wastes are now temporarily housed at hundreds of sites around the country. No permanent storage solution has yet been found.

The wastes include such long-lived and extremely toxic elements as plutonium, neptunium and americium. These actinides emit ionizing radiation which can impair or destroy living cells and lead to cancer or genetic damage. Such wastes must be isolated from human contact for hundreds of thousands of years.

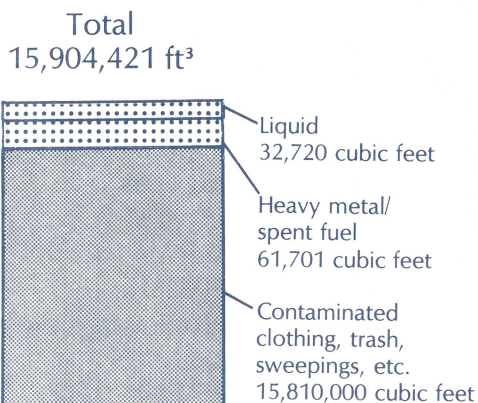
## Military Wastes

Military wastes, the resultant "hot soup" from reprocessing activities, are stored at various "interim" sites in some 200 steel tanks. Although built to last more than 50 years, some tanks began to spring leaks as soon as three years after being put into service. At Hanford, over 430,000 gallons of high-level wastes have leaked from 16 different tanks.<sup>2</sup>

When measured in volume the military wastes tower over commercial. But in terms of radioactivity the two are approximately equal. Commercial high-level wastes, for the most part, are still in concentrated spent fuel form whereas the military spent fuel has been reprocessed and stored predominantly in "hot soup" form, 100 times more dilute than spent fuel.

## Commercial Wastes

There are 72 commercial reactors currently in operation in the United States, each discharging 30-40 tons of spent fuel a year. Spent fuel is presently stored in large pools of water at individual reactor sites and at one away-from-reactor storage pool. The pools are filling rapidly, however. It has been suggested that more spent fuel could be fit into a single pool by crowding the rods into tighter spaces. A loss of water in a crowded pool, however, could lead to overheating and massive releases of radioactivity.



**MILITARY**

**COMMERCIAL**

Low-level waste      High-level waste

## Mountains of Mill Tailings

When uranium is mined and milled, one ton of ore must be processed to produce just four pounds of uranium oxide. The resultant 1,996 pounds of fine gray sand are what is called uranium mill tailings. Of necessity, tailings are generated in large volume (over 140 million tons are in existence) and have usually been left out in large open piles, some as close as a few hundred feet to urban thoroughfares.

Tailings piles are not only the major health culprits to date, but account for an incredible 97% of the total volume of nuclear wastes. 140 million tons translated into volumetric figures (at a rough conversion rate of 20ft<sup>3</sup> per ton) equals almost three billion cubic feet. This astronomical amount of material, although less radioactively potent per cubic foot, dwarfs the mere millions of cubic feet of high and low level wastes. A uranium mill tailings bar graph would be 46 times as high as the accompanying one for military wastes. At the present annual generation rate of 10-15 million tons, the uranium industry is every year producing about four times as much waste as the military machine has accumulated in over three decades of bomb-building.



## The Reprocessing 'Solution'

Reprocessing, the extraction of reusable elements from spent fuel, was originally proposed as a solution to the waste problem. But reprocessing creates more radioactive material than it reclaims and remains unproven commercially. Military reprocessing has been going on continuously for 35 years, but only one commercial plant, Nuclear Fuel Services in West Valley, New York, has ever operated. And that facility closed in 1972 after only six years of operation at one-fourth of its design capacity. Releases of radioactivity from the building contaminated nearby water, air, fish and wildlife.<sup>3</sup> Two other plants at Morris, IL and Barnwell County, SC have been constructed but never opened.

## Transportation

Reprocessing also poses transportation hazards. Commercial reprocessing would require annually shipping millions of pounds of plutonium and other high-level wastes, activities for which the industry track record has been dismal. Already there have been over 300 highway accidents, more than 100 involving radioactive releases.

On February 12, 1980, President Carter announced plans for what he called the nation's "first comprehensive radioactive waste program". Among other things, the new policy calls for the purchase of at least one "away-from-reactor" storage site for spent fuel by 1983. While this move will relieve the present overcrowding of on-site storage pools, it will also increase the likelihood of future transportation accidents.

## Proliferation

A key by-product of reprocessing is plutonium, the stuff of nuclear bombs. It is produced in every nuclear reactor, whether military or commercial. The dangers of nuclear proli-

feration motivated President Carter to declare a reprocessing moratorium in 1977.

Over history, America has been the world's largest exporter of nuclear reactors. We've spread weapons-grade material throughout the globe, including to repressive dictatorships. Approximately four tons of radioactive material, mostly highly-enriched uranium and plutonium have been lost—"unaccounted for"—according to the government. In 1965, for example, the Nuclear Materials and Equipment Company of Apollo, PA reported a loss of over 200 pounds of bomb-grade uranium.<sup>4</sup> The possibility that such materials could be diverted to terrorist groups cannot be discounted.

## Waste Storage

Burial of wastes in salt beds has been suggested as a safe method of disposal, but groups such as the Environmental Protection Agency and the National Academy of Sciences have raised serious questions about the advisability of salt storage. In the 1960's the Atomic Energy Commission proposed using abandoned salt mines near Lyons, Kansas. The site was quietly dropped in 1972, however, when a series of old drill holes were discovered only a half-mile from the supposedly isolated mine.

## The SANE Strategy

SANE believes that storage and reprocessing efforts should halt until the many unresolved scientific and safety questions are resolved. In the meantime, all further nuclear development should cease. It is absurd to add to the waste stockpiles when no safe disposal methods exist now or in the foreseeable future.

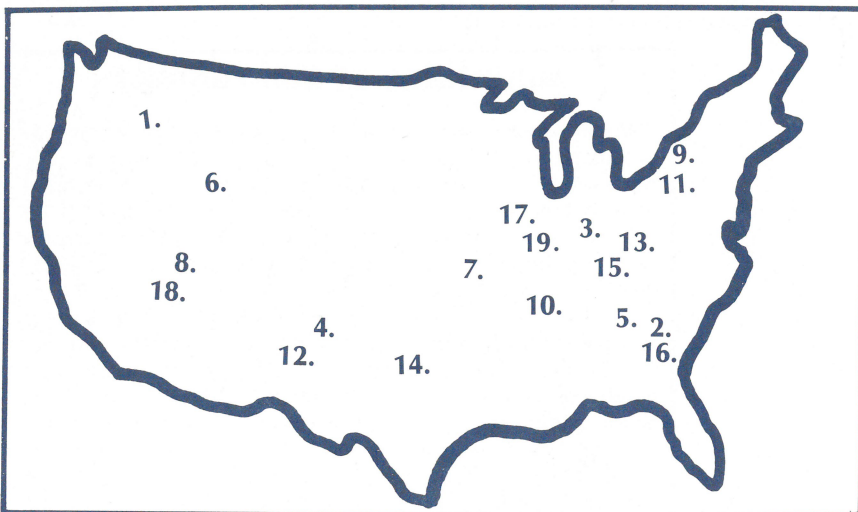
The President should call a complete nuclear moratorium; no additional construction or operating permits should be issued for civilian reactors; and the further production of nuclear weapons should be halted.

<sup>1</sup>Department of Energy, *Report to the President by the Interagency Review Group on Nuclear Waste Management*, March 1979.

<sup>2</sup>Robert Gilette, "Radiation Spill at Hanford: The Anatomy of an Accident," *Science* (August 24, 1973).

<sup>3</sup>Richard Severo, "Too Hot To Handle," *New York Times Magazine*, (April 10, 1977).

<sup>4</sup>David Burnham, "The Case of the Missing Uranium," *Atlantic*, (April 1979).



for more information contact:

**sane**

A CITIZEN'S ORGANIZATION  
FOR A SANE WORLD...  
514 C STREET, NE  
WASHINGTON, DC 20002  
202-546-7100

Additional copies of this  
leaflet cost 5 cents each,  
\$4.00 for 100, \$16.00 for 500.

### KEY

#### Military High and Low-level Wastes

1. Hanford, WA	6,102,500 ft <sup>3</sup> HLW
	6,400,000 LLW
2. Savannah River, SC	2,900,000 HLW
	9,270,000 LLW
3. Fernald, OH	11,450,000 LLW
4. Los Alamos, NM	8,550,000 LLW
5. Oak Ridge, TN	7,570,000 LLW
6. Idaho Falls, ID	404,000 HLW
	5,270,000 LLW
7. Weldon Springs, MO	1,520,000 LLW
8. Nevada Test Site	270,000 LLW
9. Niagara Falls, NY	240,000 LLW
10. Paducah, KY	220,000 LLW
11. West Valley, NY	49,080 HLW
12. Sandia Lab, NM	40,000 LLW
13. Portsmouth, OH	10,000 LLW
14. Pantex, TX	4,000 LLW

#### Commercial High and Low-level Wastes

15. Maxey Flats, KY	4,950,000 ft <sup>3</sup> LLW
16. Barnwell, SC	3,520,000 LLW
11. West Valley, NY	32,720 HLW
	2,460,000 LLW
17. Sheffield, IL	2,400,000 LLW
18. Beatty, NV	1,970,000 LLW
1. Hanford, WA	510,000 LLW
19. Morris, IL	4,061 Spent Fuel

In addition, spent fuel is stored at the site of the 72 operating commercial reactors, and uranium tailings are stored at over 130 mill sites, predominantly in Colorado, New Mexico, Utah and Wyoming.