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# Plan to clean up polluted soil at JPL unveiled

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**LA CAÑADA FLINTRIDGE** — Federal and state officials Monday presented a plan to clean up contaminated soil beneath the Jet Propulsion Laboratory.

The soil under about 45 of the lab's 176 acres contains elevated concentrations of solvents known as volatile organic compounds, said Peter Robles of NASA's Management Office.

There are four in particular: carbon tetrachloride; trifluoroethane, or Freon 113; trichloroethene, and 1,1-dichloroethene. They form a vapor plume that ranges in depth from 50 to 200 feet under JPL's center, Robles said.

The chemicals are the legacy of the 1940s and 1950s, when wastes such as solid and liquid rocket propellants were collected in seepage pits at JPL designed to allow liquid waste to seep into the surrounding soil.

"At that time it was the most accepted practice," Robles told the roughly 30 people who attended the public hearing at JPL on the matter. "It was within the regulations, no problem at all. We found out later that that was a mistake and we had to correct that."

The seepage pits were replaced with a sewer system during the late 1950s and early 1960s, he said, but a 1990 investigation revealed the presence of the volatile organic compounds. JPL was placed on the U.S. Environmental Protection Agency's Superfund National Priority List in 1992.

Now the National Aeronautics and Space Administration is working with the EPA, the state Department of

Toxic Substances Control and the Regional Water Quality Control Board to clean up the contaminants in the soil and ground water at JPL.

Officials Monday night did not talk about the ground water, saying NASA intends to address the issue separately.

From 1994 to 1998, JPL assessed where the chemicals were and what the health risk was, said Richard Zuromski of the Naval Facilities Engineering Command.

"The human health risk assessment determined that there were no risks above regulatory thresholds from exposure to soils or soil vapor," Zuromski said. "These chemicals are now more than 50 feet below the ground surface, so exposure to humans is very much unlikely."

But, he added, the chemicals may continue to migrate through the soil and permeate the ground water, so they want to use a technique called soil vapor extraction to clean them up.

In the proposed plan, volatile organic compounds would literally be vacuumed out of the soil and trapped in an above-ground well, where the chemicals in the vapor would be treated to prevent their escape into the atmosphere, Zuromski said.

JPL has been using the technique since 1998 as part of a pilot program, he said. So far, soil vapor extraction has removed about 200 pounds of chemicals from below the surface.

The plan now on the table would cost NASA about \$3.8 million a year for as long as it is needed. Monday's meeting was the second in a series of three to get feedback from the public.