



Highlights of [GAO-05-462](#), a report to the Chairman, Subcommittee on Environment and Hazardous Materials, House Committee on Energy and Commerce

## Why GAO Did This Study

Perchlorate, a primary ingredient in propellant, has been used for decades in the manufacture and firing of rockets and missiles. Other uses include fireworks, flares, and explosives. Perchlorate has been found in drinking water, groundwater, surface water, and soil in the United States. The National Academy of Sciences (NAS) reviewed studies of perchlorate's health effects and reported in January 2005 that certain levels of exposure may not adversely affect healthy adults but recommended more studies be conducted on the effects of perchlorate exposure in children and pregnant women.

GAO determined (1) the estimated extent of perchlorate in the United States, (2) what actions have been taken to address perchlorate, and (3) what studies of perchlorate's health risks have reported.

## What GAO Recommends

GAO recommends that EPA work with federal agencies and the states to establish a structure to track and monitor perchlorate detections and cleanup efforts.

EPA agreed with our findings but DOD did not. Neither agency agreed with our recommendation. GAO believes its findings are sound; further, DOD's citation of sites not on EPA's list underscores the need for this recommendation.

[www.gao.gov/cgi-bin/getrpt?GAO-05-462](http://www.gao.gov/cgi-bin/getrpt?GAO-05-462).

To view the full product, including the scope and methodology, click on the link above. For more information, contact John B. Stephenson at (202) 512-3841 or [stephensonj@gao.gov](mailto:stephensonj@gao.gov).

# PERCHLORATE

## A System to Track Sampling and Cleanup Results Is Needed

### What GAO Found

Perchlorate contamination has been found in water and soil at almost 400 sites in the United States where concentration levels ranged from a minimum reporting level of 4 parts per billion to millions of parts per billion. More than one-half of all sites were in California and Texas, and sites in Arkansas, California, Texas, Nevada, and Utah had some of the highest concentration levels. Yet, most sites had lower levels of contamination; roughly two-thirds of sites had concentration levels at or below the Environmental Protection Agency's (EPA) provisional cleanup standard of 18 parts per billion. Federal and state agencies are not required to routinely report perchlorate findings to EPA, and EPA does not centrally track or monitor perchlorate detections or the status of cleanup. As a result, a greater number of contaminated sites than we reported may already exist.

Although there is no specific federal requirement to clean up perchlorate, EPA and state agencies have used broad authorities under various environmental laws and regulations, as well as state laws and action levels, to sample and clean up and/or require the sampling and cleanup of perchlorate by responsible parties. Further, under certain federal and state environmental laws, private industry may be required to sample for contaminants, such as perchlorate. According to EPA and state officials, private industry and public water suppliers have generally complied with regulations requiring sampling and agency requests to sample. The Department of Defense (DOD) has sampled and cleaned up perchlorate in some locations when required by laws and regulations, but the department has been reluctant to sample on or near active installations under other circumstances. Except where there is a specific legal requirement, DOD's perchlorate sampling policy requires the services to sample only under certain conditions. Cleanup is planned or under way at 51 of the almost 400 perchlorate-contaminated sites identified to date.

Since 1998, EPA and DOD have sponsored a number of perchlorate health risk studies using varying study methodologies. We reviewed 90 of these studies that generally examined whether and how perchlorate affected the thyroid. About one-quarter concluded that perchlorate had an adverse effect. In January 2005, NAS reported on the potential health effects of perchlorate and concluded that a total exposure level from all sources, higher than that initially recommended by EPA (a dose equivalent to 1 part per billion in drinking water, assuming that all exposure came from drinking water) may not adversely affect a healthy adult. On the basis of NAS' report, EPA revised its reference dose to a level that is equivalent to 24.5 parts per billion in drinking water (if it is assumed that all exposure comes only from drinking water). The reference dose is not a drinking water standard; it is a scientific estimate of the total daily exposure level from all sources that is not expected to cause adverse effects in humans, including the most sensitive populations.