



Highlights of [GAO-10-769](#), a report to the Ranking Member, Committee on Environment and Public Works, U.S. Senate

## Why GAO Did This Study

Perchlorate is both a man-made and naturally occurring chemical. It is used in rocket fuel, explosives, fireworks, and other products. Naturally occurring perchlorate is produced through atmospheric processes and then settles on surface water or land. Perchlorate can disrupt the uptake of iodide in the thyroid, potentially interfering with thyroid function and negatively affecting fetal and infant brain development and growth. As of June 2010, there is no federal regulatory standard for perchlorate in drinking water, and the Environmental Protection Agency (EPA), which has the authority to regulate contaminants in public drinking water systems, had not determined whether to establish one. The Department of Defense (DOD), the National Aeronautics and Space Administration (NASA), and the Department of Energy (DOE) are the primary federal users of perchlorate.

GAO was asked to examine (1) what is known about the extent to which perchlorate occurs in the nation's water and food supply and its likely sources; (2) what actions DOD, NASA, and DOE have taken to respond to or lessen perchlorate releases; and (3) what actions states, such as California and Massachusetts, have taken to regulate perchlorate. To address these questions, GAO analyzed data from EPA, DOD, NASA, and DOE, reviewed agency documents, and interviewed federal and state officials, researchers, and others.

This report contains no recommendations.

View [GAO-10-769](#) or [key components](#). For more information, contact John Stephenson at (202) 512-3841 or [stephensonj@gao.gov](mailto:stephensonj@gao.gov).

## PERCHLORATE

### Occurrence Is Widespread but at Varying Levels; Federal Agencies Have Taken Some Actions to Respond to and Lessen Releases

#### What GAO Found

Perchlorate has been found in water and other media at varying levels in 45 states, as well as in the food supply, and comes from a variety of sources. EPA conducted one nationwide perchlorate sampling, between 2001 and 2005, and detected perchlorate at or above 4 parts per billion in 160 of the 3,865 public water systems tested (about 4.1 percent). In 31 of these 160 systems, perchlorate was found above 15 parts per billion, EPA's current interim health advisory level. Sampling by DOD, NASA, and DOE detected perchlorate in drinking water, groundwater, surface water, soil, and sediment at some facilities. For example, GAO's analysis of DOD data showed that perchlorate was detected at almost 70 percent of the 407 installations sampled from fiscal years 1997 through 2009, with detections ranging from less than 1 part per billion to 2.6 million parts per billion. A 2006 Food and Drug Administration study found perchlorate in 74 percent of 285 food items tested, with certain foods, such as tomatoes and spinach, having higher perchlorate levels than others. According to researchers, concentrations of perchlorate at or above 100 parts per billion generally result from activities involving man-made perchlorate, such as the use of perchlorate as a rocket propellant. Lower concentrations can result from the use of man-made perchlorate, atmospheric processes, or the use of fertilizer containing naturally occurring perchlorate.

According to DOD, NASA, and DOE officials, the agencies have sampled, monitored and, at several sites, begun cleaning up perchlorate. When DOD detects perchlorate at or above threshold levels—currently 15 parts per billion for water—DOD is to investigate further and may take additional actions. DOD has taken actions beyond initial sampling at 48 of the 53 installations with perchlorate detections above 15 parts per billion. NASA is in the midst of a cleanup at the Jet Propulsion Laboratory in California and is monitoring the level of perchlorate in groundwater at three other facilities. In addition, DOE is cleaning up perchlorate at two facilities involved in high explosives research, development, and testing and is monitoring the level of perchlorate in groundwater at two other facilities. According to DOD, NASA, and DOE officials, the perchlorate detected at their facilities is largely the result of past disposal practices. Officials at these agencies told us that by complying with current federal and state waste disposal laws and regulations, they have lessened their perchlorate releases. In addition, DOD is developing perchlorate substitutes for use in weapons simulators, flares, and rockets.

In the absence of a federal regulatory standard for perchlorate in drinking water, California and Massachusetts have adopted their own standards. California adopted a drinking water standard of 6 parts per billion in 2007, and Massachusetts set a drinking water standard of 2 parts per billion in 2006. The key benefits of a regulatory standard cited by state officials include protecting public health and facilitating cleanup enforcement. However, limited information exists on the actual costs of regulating perchlorate in these states. Also, at least 10 other states have established guidance levels for perchlorate in drinking water (ranging from 1 to 18 parts per billion) or in groundwater.