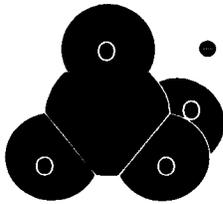




Preventing Perchlorate Contamination

What is perchlorate?

Perchlorate is a chemical that is both manufactured and naturally occurring and is generally found in the form of either an ammonium, potassium, or sodium salt. When dissolved in water, it is easily transported by the flow of water either above or beneath the ground.



Primarily, perchlorate is used as a component in solid rocket propellants, but it can also be found in road flares, fireworks, pyrotechnic devices, explosives, common batteries, bleach and fertilizers.

What are the health effects of perchlorate?

Perchlorate can disrupt the function of the thyroid gland by interfering with iodide uptake and thyroid hormone production. This disruption can lead to developmental defects. Therefore, pregnant women, children, infants and people with thyroid disorders are considered to be at the highest risk if exposed to perchlorate. Due to these health risks, the California Office of Environmental Health Hazard Assessment published a Public Health Goal of 6 parts per billion (ppb) for perchlorate in drinking water; which is equivalent to about 3 teaspoons of perchlorate salt in an Olympic-sized swimming pool.

What are the Best Management Practices (BMPs) for Perchlorate?

Hazardous material regulations have already been established for perchlorate because in its pure form it is a strong oxidizer that can explode, can change violently and is flammable. Since evidence has proven that perchlorate has been appearing in increasing levels in drinking water, groundwater, surface water, soil, and even in a variety of food items (such as milk and vegetables); the California State legislature passed the Perchlorate Contamination Prevention Act of 2003 in order to reduce or eliminate the release of perchlorate into the

environment. In response to this legislation, the Department of Toxic Substances Control (DTSC) adopted the Perchlorate Best Management Practices (BMP) regulations on December 1, 2005 which became effective July 1, 2006. These regulations pertain to any person working with or managing the use of perchlorate materials. Since Caltrans maintenance crews regularly utilize road flares, fertilizers, detonation devices and a variety of batteries which may contain perchlorate during their routine maintenance activities, the following BMPs should be followed:

Naturally Occurring Perchlorate

Perchlorate may be naturally occurring within Caltrans' properties. In cases where remediation is necessary, ensure that the BMPs for stockpile management are utilized in order to prevent the potential runoff of any perchlorate-contaminated soils.

Flares/Fuses

Road flares contain perchlorate salts. When using road flares in emergency situations, make sure that the number of road flares is minimized to ensure safety; all flares are burned out completely; and that any remaining residue is disposed of properly (in a dumpster).

Fertilizers

Chilean (sodium) nitrate is a mined source of nitrogen used in several fertilizer products. Other names for this form of nitrate include: Bulldog Soda, nitrate of soda, Chilean saltpeter, soda niter, and nitric acid sodium salt. Chilean nitrate fertilizers contain perchlorate salts. Therefore, when using these fertilizers, check the label to determine whether perchlorate salts are present. If it is, the packaging will be marked "Perchlorate Material - Special Handling May Apply". Make sure any perchlorate containing fertilizer is kept in durable and water-resistant packaging or containers, and precisely follow any instructions found on the package label and/or any Material Safety Data Sheet (MSDS) provided.

Detonators

Perchlorate salts have also been used as detonators. When using detonators for snow control, always check the label to determine if the detonator contains perchlorate. If so, handle the material

properly and dispose of any used detonators as per the manufacturer's printed instructions.

Batteries

Small button batteries with identification numbers starting with "CR" contain perchlorate. If using this type of battery, follow the packaging directions to ensure correct disposal of used batteries.

Spills

Ensure that all perchlorate material spills are immediately contained and collected in order to prevent discharge to a storm drain or watercourse. If materials resulting from a spill are considered hazardous, manage and dispose of the material according to all applicable regulatory requirements.

Pollution Prevention

On or before January 1, 2008, and every five years thereafter, an entity that uses perchlorate-containing fertilizers and safety flares in an amount greater than 500 pounds at any given time must review and record the use of these products; investigate and determine if a non-perchlorate-containing alternative is available; and review, improve and implement, as appropriate, all pollution prevention measures utilized to prevent the release of perchlorate in any form.

One-Time Notification

On or before September 1, 2007, an entity managing more than 500 pounds of solid perchlorate material or 55 gallons of liquid perchlorate material must submit to DTSC a one-time notification listing their perchlorate materials and their related uses.

For general information and fact sheets about perchlorate and links to other online resources, please visit www.dtsc.ca.gov/Hazardous_Waste/Perchlorate/index.cfm.

Questions or comments may be directed to Greg Lockshaw @ gregory_lockshaw@dot.ca.gov

