# For the Record- Correction re: Perchlorate

**Highlights from "Ask-A-Groundwater Specialist", Hydrovisions, Summer 2002, p. 20 contained a** question from Sarah about perchlorate. The response provided to Sarah's question was for the organic solvent perchloroethylene and not for the inorganic anion perchlorate. A revised response is provided below. In addition, a revised response was provided to Sarah and a correction posted at www.grac.org . We apologize for the error and inconvenience this may have caused. Thank you to everyone that has contacted us on this correction, and to Tom Mohr for providing this revised response.

## Revised Response to Sarah's Questions

1. **When was perchlorate first detected in drinking water?**

The laboratory methods available to water supply managers before 1997 were not sufficient to detect perchlorate at low concentrations. It was possible to analyze for perchlorate using a method known as ion chromatography to detect perchlorate at concentrations of 150 to 200 parts per billion and higher, but most labs were not asked to run this test because the threat of perchlorate was not widely understood. Since most water supplies that have been contaminated with perchlorate have much lower concentrations than the ion chromatography detection limit, even those labs that did test drinking water supplies for perchlorate usually did not detect it.

The California Department of Health Services (DHS) detected perchlorate in wells in Ranch Cordova, near the Aerojet Missile Plant, in 1997. The DHS immediately embarked on a large testing program, and also conducted research to develop a significantly improved laboratory method, which lowered detection limits to 4 ug/L (micrograms per liter or parts per billion). The results of the DHS perchlorate testing effort showed that there are several water supplies near solid rocket motor assembly facilities that have been impacted by perchlorate.

More information on DHS's work on perchlorate and the history of its discovery can be found at http://www.dhs.ca.gov/ps/ddwem/chemicals/perchl/earlyfindings.htm.

2. **How did it get there?**

Solid rocket motors use aluminum powder as a fuel (about 17%), ammonium perchlorate as an oxidizer (about 80%), and a rubber binder called PBAN (polybutadiene acrylonitrile) to hold it all together after baking the mixture. Solid rocket motors are not stable – the rubber binder slowly oxidizes and breaks down, so the motors must be replaced periodically. The solid fuel is removed from the metal casing and replaced with fresh fuel. The waste fuel was often washed into holding ponds, or stored in open burn pits for burning when weather conditions permitted. Because perchlorate is very soluble, rain washed it into soil and groundwater, and it eventually migrated to drinking water wells. Other sources of perchlorate include highway safety flares, fireworks, explosives, electroplating operations, and as a minor component of certain varieties of Chilean nitrate fertilizers.

3. **What is being done to remove perchlorate from drinking water?**

In most instances, if perchlorate is discovered in a drinking water well or reservoir, that source is no longer used to supply water. State and federal agencies responsible for protecting the environment and our water supply pursue the companies responsible for the contamination and enforce laws requiring that they clean up the contamination. Information on cleanup cases can be found at the agencies' websites. A detailed history of the Rancho Cordova site can be found at http://www.atsdr.cdc.gov/HAC/PHA/aero/agc_p1.html

4. **What is the drinking water standard for perchlorate?**

In January of 2002, the DHS lowered California's advisory drinking water action level from 18 ug/L to 4 ug/L. Studies are continuing to determine health effects and what levels may be considered safe for human consumption. See: http://www.dhs.cahwnet.gov/ps/ddwem/chemicals/perchl/actionlevel.htm

**5. Are there plans to remove perchlorate from drinking water?**

There are lots of cleanup projects underway to remove perchlorate from drinking water. Treatment of perchlorate-contaminated water is somewhat more difficult and expensive than many other contaminants. Methods currently in use include oxidation using ultraviolet light, chemical oxidation, manipulation of geochemical conditions in the water using microbiological methods, and specialized resins. Millions of dollars are being spent to remove perchlorate from drinking water in the San Gabriel Valley, Rancho Cordova, and elsewhere.

**6. Why isn't the public more readily notified?**

Water suppliers are required to notify consumers of the water they distribute when contamination is discovered. The level of notification varies by the severity of contamination and how the contaminant in question is classified. Because perchlorate is not yet regulated using a legally enforceable standard, an Action Level has been developed to advise consumers that a potentially harmful contaminant has been found. Water suppliers are generally very conscientious about notifying their customers when a problem is found, because the success of water supply businesses depends in large part on the trust of the consumer that the supplier is doing everything possible to ensure the consumer is protected. Every year, residents are mailed an annual "Consumer Confidence Report". Most residents don't study this report, but it contains a lot of information about the behind the scenes work that is routinely conducted to ensure the safety of the water supply. To obtain a report, call the local water utility that supplies your water.

There is a wealth of information about perchlorate on the Internet, and the links below have further information. A binder of information from GRA's recent Perchlorate conference can be obtained from GRA – see http://www.grac.org.

http://www.dhs.ca.gov/ps/ddwem/chemicals/perchl/perchlindex.htm
http://www.epa.gov/safewater/ccl/perchlor/perchlo.html

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