

## **NATURAL RESOURCES DEFENSE COUNCIL AND CLEAN WATER ACTION**

### **MEETING WITH OMB**

#### **re: PERCHLORATE REGULATORY DETERMINATION**

**RIN: 2040-AF02 / 2040-AF08**

**January 13, 2011**

Pursuant to the Safe Drinking Water Act, EPA must regulate a contaminant if it may have an adverse effect on human health, if it is known to occur (or there is a substantial likelihood that the contaminant will occur) in public water systems with a frequency and at levels of public health concern; and if its regulation would present a meaningful opportunity for health risk reduction for persons served by public water systems.<sup>1</sup>

### **Perchlorate contamination has an adverse effect on human health**

In October 2008, the Bush EPA said that perchlorate may have an adverse effect on human health.<sup>2</sup> A new analysis by California state researchers reported that babies born in areas with perchlorate-contaminated tap water above 5 ppb had a 50% chance of having a measurable decline in thyroid function, measured by elevated TSH.<sup>3</sup> These data show that the observed effect used to set the RfD is a potentially adverse effect (impaired thyroid hormone production that potentially leads to abnormal development).

Insufficient thyroid hormone during early life development, as evidenced in the careful study of infants born with congenital hypothyroidism, is highly correlated with permanent impaired intelligence.<sup>4</sup> Drs. Carol Bigelow and Tom Zoeller, both highly-respected scientists, noted in written comments to EPA that, "... small differences in available thyroid hormone (and the iodine associated with it) during the first few weeks of life can have significant lifetime consequences".<sup>5</sup>

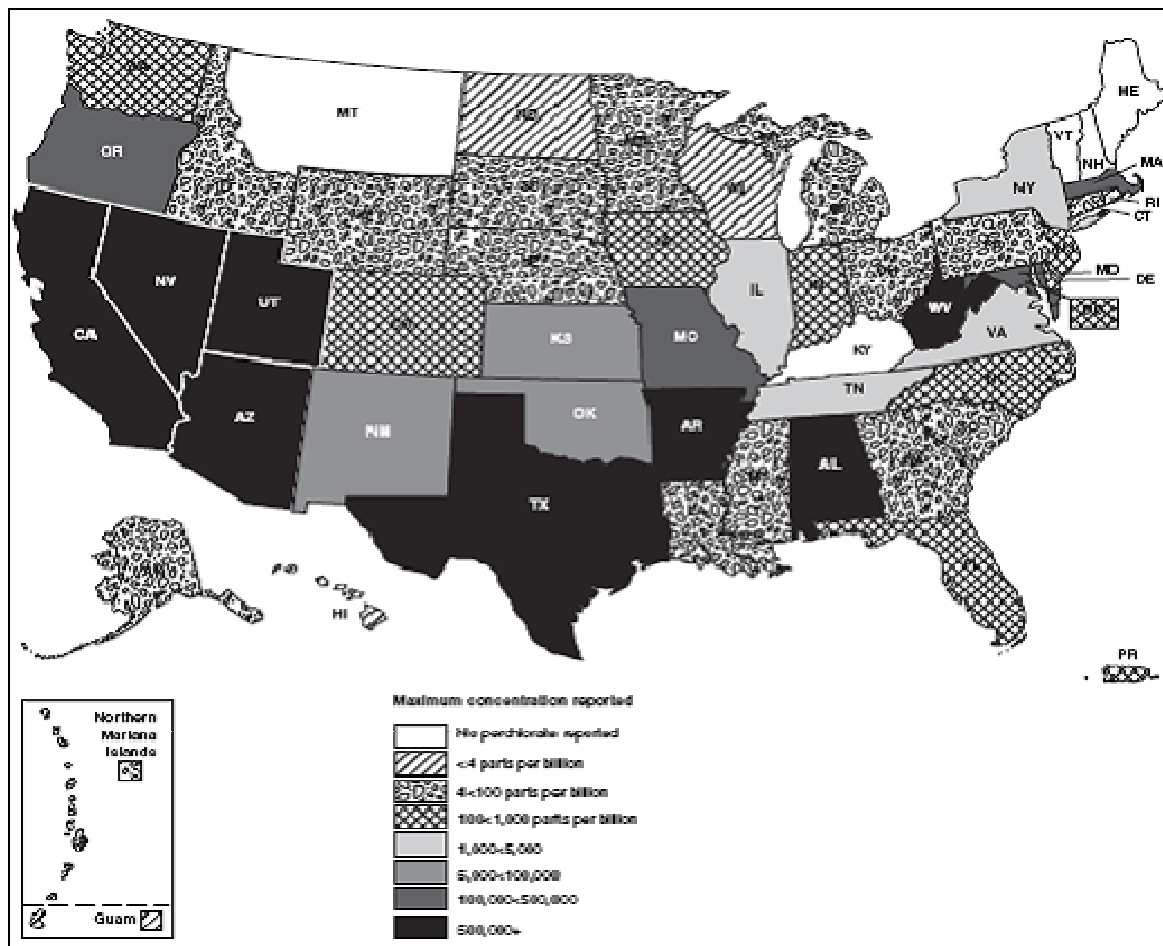
### **Perchlorate contamination is widespread**

According to EPA data, approximately 4% of 3865 public water supplies tested (which serve 17.6 million people) had detections of perchlorate at or above 4 ppb (the lowest level that was looked for) or higher.<sup>6</sup>

According to the GAO 2010 report on perchlorate:

*“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... 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.”<sup>7</sup>*

Figure 2: Maximum Perchlorate Concentrations Reported in Any Media as of October 2009



Sources: EPA and DOD; Map Resources (map).

The FDA 2008 Total Diet Study reported finding perchlorate in 59% of total samples analyzed from a wide variety of foods.<sup>8</sup> For infants, perchlorate from baby foods including infant formula and dairy foods represented 81% of the total dose. It is likely that perchlorate-contaminated irrigation water is contributing to food contamination.

Perchlorate is found in human breast milk.<sup>9 10 11</sup> One study has found perchlorate was concentrated in breast milk three times more than iodine.<sup>12</sup> Perchlorate-contaminated food and water may likely contribute to breast milk contamination.

Massachusetts has an MCL of 2 ppb, California has proposed a Public Health Goal of 1 ppb, and New Jersey had proposed an MCL of 5 ppb.

NRDC supports the EPA's belief that further review by the NRC would create an unnecessary delay without adding anything to the scientific rigor of the EPA's determination. After over 17 years of accumulated science (documented above), two EPA toxicological reviews (1998, 2002), and a lengthy NRC review (2004), it is past time for EPA to take effective regulatory action to protect people's health by preventing exposure to perchlorate.

---

<sup>1</sup> 42 U.S.C. §300g-1(b)(1)(A).

<sup>2</sup> 73 Federal Register 60262, 60275 (October 10, 2008)

<sup>3</sup> Steinmaus C, Miller MD, Smith AH. Perchlorate in drinking water during pregnancy and neonatal thyroid hormone levels in California. *J Occup Environ Med.* 2010 Dec;52(12):1217-524

<sup>4</sup> Heyerdahl S, Oerbeck B (2003) Congenital hypothyroidism: developmental outcome in relation to levothyroxine treatment variables. *Thyroid* 13:1029-1038.

<sup>5</sup> Comments by Drs. Carol Bigelow and R. Thomas Zoeller on EPA regulatory determination on Perchlorate. October 20, 2008. Docket EPA-HQ-OW-2008-0068

<sup>6</sup> 73 Federal Register 60262, 60270 (October 10, 2008)

<sup>7</sup> GAO Report: PERCHLORATE: Occurrence Is Widespread but at Varying Levels; Federal Agencies Have Taken Some Actions to Respond to and Lessen Releases, August 2010, GAO-10-769

<sup>8</sup> Murray, CW, Egan SK, Kim H, Beru N, Bolger PM.(2008) US Food and Drug Administration's Total Diet Study: Dietary intake of Perchlorate and iodine. *J Exp Sci Environ Epi.* 1-10

<sup>9</sup> Dohan, O, C Portulano, C. Basquin, A Reyna-Noyra, LM Amzel, and N Carrasco. 2007. The Na<sup>+</sup>/I<sup>-</sup> symporter (NIS) mediates electroneutral active transport of the environmental pollutant perchlorate. *PNAS* 104(51):20250-20255.

<sup>10</sup> Kirk AB, Dyke JV, Martin CF, Dasgupta PK (2007) Temporal patterns in perchlorate, thiocyanate, and iodide excretion in human milk. *Environ Health Perspect* 115:182-186.

---

<sup>11</sup> Pearce EN, Leung AM, Blount BC, Bazrafshan HR, He X, Pino S, Valentin-Blasini L, Braverman LE (2007) Breast milk iodine and perchlorate concentrations in lactating Boston-area women. *J Clin Endocrinol Metab* 92:1673-1677.

<sup>12</sup> Dasgupta, P. K., Kirk, A. B., Dyke, J. V., and Ohira, S.-I. (2008). Intake of Iodine and Perchlorate and Excretion in Human Milk. *Environ. Sci. Technol.* 42, 8115-8121.