RECENT PERCHLORATE STUDIES AT A GLANCE

60 years of perchlorate research led to the National Academy of Sciences' (NAS) landmark report 10 years later, new science still overwhelmingly supports the NAS conclusions

WHAT WE KNEW FOLLOWING NAS:

Perchlorate has never been shown to cause adverse health effects, even at levels as high as 100,000 ppb.

- **Perchlorate does not cause cancer or birth defects**, and it isn't stored in the body.
- **Perchlorate has no measurable effect** in healthy adults at levels below 245 parts per billion (ppb).
- At high enough levels, perchlorate can block some iodine from entering the thyroid – a process called Iodine Uptake Inhibition, or "IUI".
- **Nitrates and thiocyantes, found naturally in foods, also cause IUI** – 98% of IUI in humans comes from these compounds – perchlorate causes less than 2%.
- If IUI persists at high levels, it could lead to temporary changes in thyroid hormone levels.
- Pregnant women and fetuses are most senstive to perchlorate exposure.

WHAT NEW STUDIES SAY:

The most prominent recent studies on perchlorate have been epidemiological.

- Epidemiological studies focus on individuals with likely lifestyle, medication, dietary, and other factors that also affect thyroid hormones. They differ from clinical studies with clear exposure and controls that leave exposure as the only factor influencing outcomes, These studies are of limited scientific value because they only identify "statistical associations," not cause and effect.
- **6 recent studies found no association** between perchlorate exposure and changes in thyroid hormones.[A]
- 2 recent studies reported statistical associations between perchlorate exposure and thyroid hormone changes. One looked at a population with high thiocyanate exposure, which may have affected results. The other used questionable methods that cast doubt on whether the "statistical associations" it found have any biological relevance.[B]
- **6** additional studies found **no statistical associations between exposure and hormone changes in pregnant women**, most with perchlorate exposures greater than those in the U.S.[C]

WHAT'S CHANGED:

ZERO. NOTHING.

- No new science has emerged that changes our understanding of how perchlorate works in the body, or shows perchlorate causes an adverse health effect.
- **Recent studies help confirm that current regulatory proposals on perchlorate are too conservative.** A 2016 study by Weterings et al. (2016) suggested that the European Food Safety Authority's "tolerable daily intake" could be increased by more than ten times and still not pose a health concern. That supports a literature review (not a study) earlier this year that reached the same conclusion.
- Following the European study's guidance, U.S. EPA could also increase its perchlorate "Reference Dose" (the amount determined safe for daily exposure over a lifetime) by more than five times without any public health implications.

WHY THIS MATTERS: Regulatory decisions must be based on the best available science and be consistent with the foundational science of perchlorate that can demonstrate cause and effect - not just epidemiological studies that report "an association." Any regulation of perchlorate without consideration of nitrate and thiocyanate would provide NO public health benefit.

[A] EPA OIG, 2010; Blount et al., 2009; Bruce et al., 2013; Lewandowski et al., 2015; Crawford-Brown, 2015, Evans et al., 2015 [B] Charatcharoenwitthaya et al., 2014; Steinmaus et al., 2015
[C] Gibbs and van Landingham, 2008; Pearce et al., 2010, 2011, 2012; Horton et al., 2015; Mortensen et al., 2016