

# Scientific Comments Regarding Perchlorate MCLG Determination



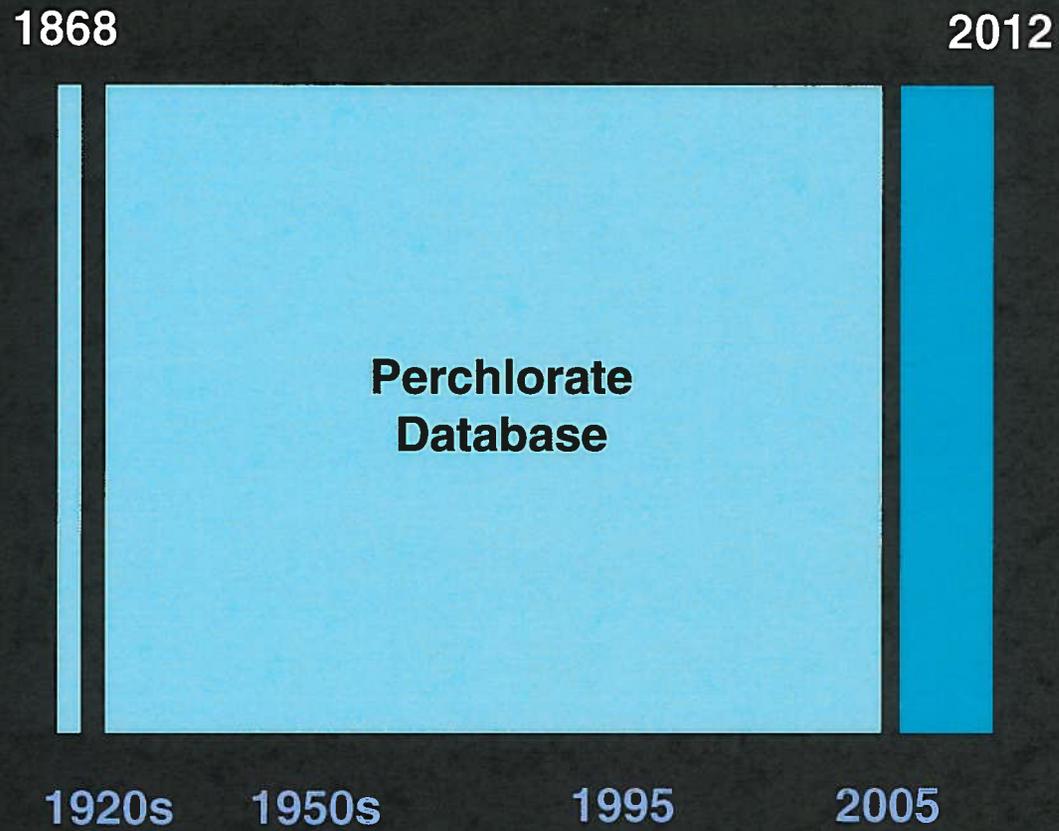
## Perchlorate Science Advisory Panel Meeting

The Embassy Suites Hotel  
1520 22<sup>nd</sup> St. NW  
Washington, DC

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Intertox, Inc.  
Seattle, WA

Intertox has conducted a rigorous scientific assessment which was submitted to the US EPA SAB on July 10, 2012.

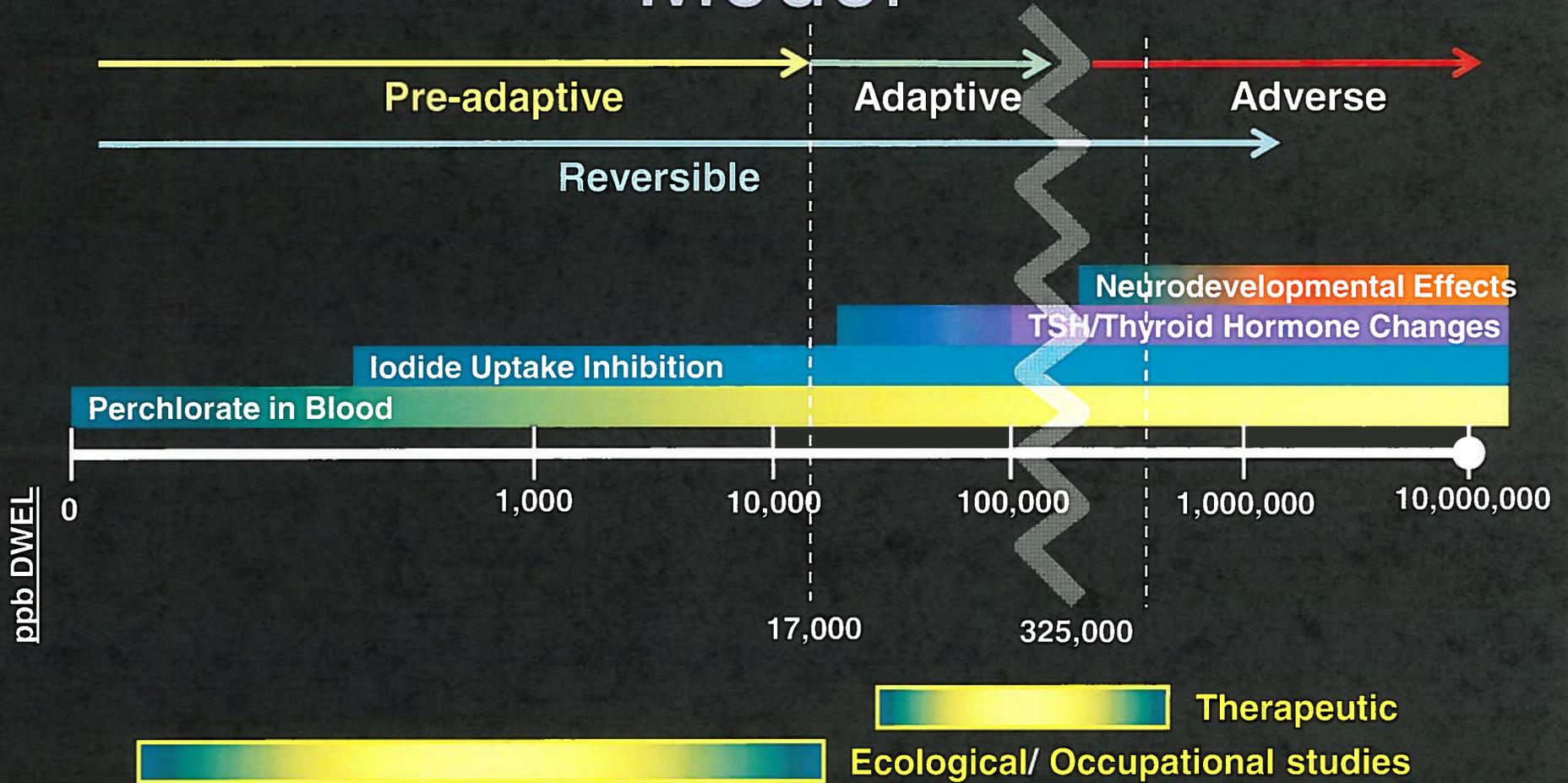
# Weight of Evidence



# Perchlorate Pharmacology

Parameter	Implication
Half life: ~ 8 hours	Leaves body quickly, need sustained sufficient dose for chronic effect.
Does not bioaccumulate	Perchlorate not stored in the body.
Water soluble	Leaves body quickly; excreted via kidneys; no chemical intermediates
IUI is non-adverse effect	Transparent and logical approach to establishing an acceptable level of exposure for risk assessment.
Perchlorate inhibition of IUI at the NIS is reversible	Need sustained sufficient dose for chronic effect.

# Thyroid Risk Assessment Model



# Point of Departure for RfD

NOEL

(No Observable Effect Level)

*Non adverse effect*

# Presence ≠ Toxicity

Detection of  $\text{ClO}_4^-$   
0.1  $\mu\text{g/mL}$  or 0.1ppb<sup>1</sup>

Literature demonstrates detection in:

Water

Urine

Blood

Breast milk

Dairy milk

Produce

Dietary supplements

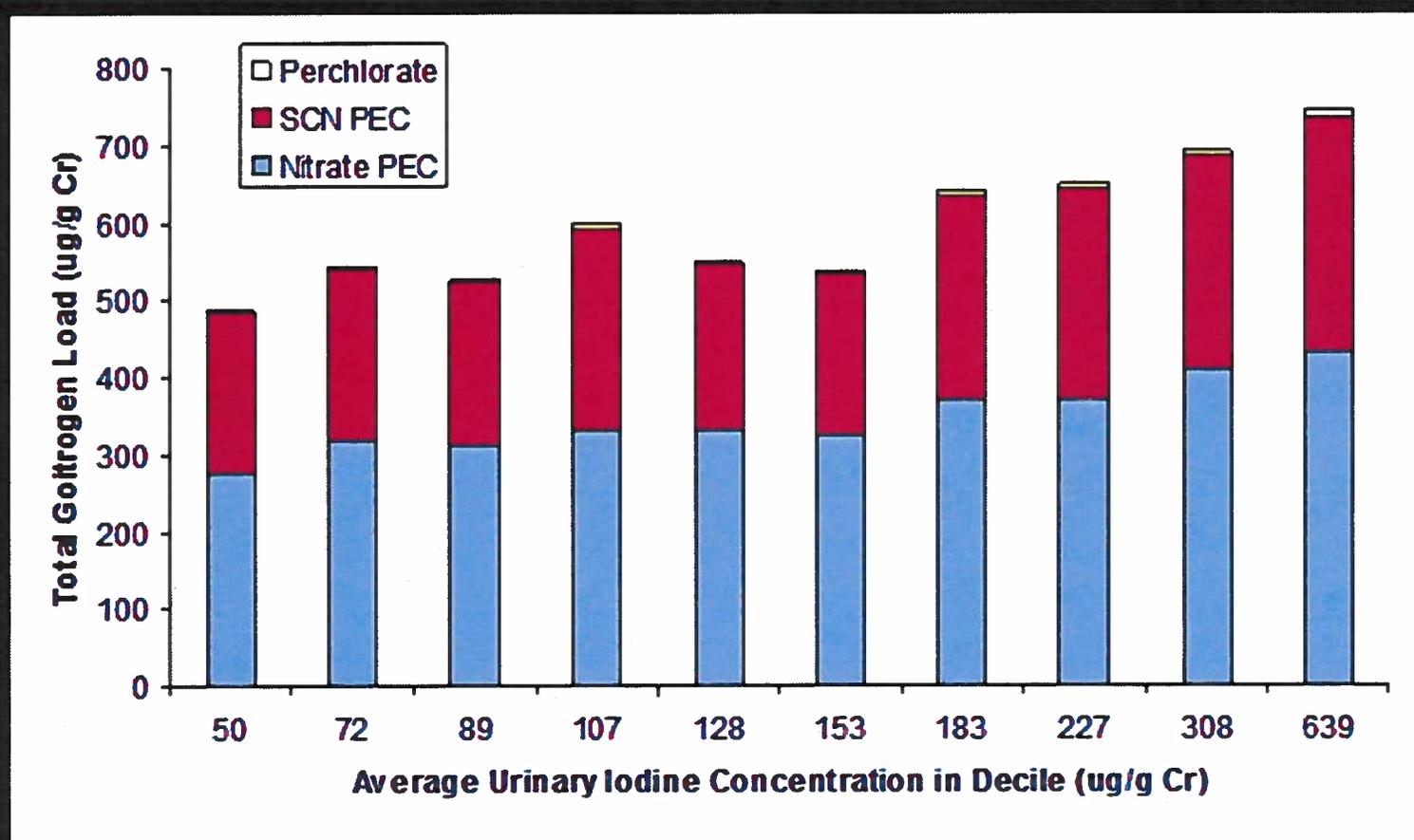
<sup>1</sup> Kamoshita et al. (2009)

# The *Most Sensitive Population*

All available evidence supports the fetus as the most sensitive subpopulation

The RfD is already protective of the *most sensitive subpopulation*; less sensitive populations are, therefore, also protected.

# Urinary Perchlorate, Nitrate, Thiocyanate, and Iodine



Total goitrogen load in perchlorate equivalence based on urinary measurements from women ages 12 and older from NHANES 2001-2002

# Use of NHANES Data

*“Research studies, separate from the Report, are required for determining whether blood or urine levels are safe or are associated with disease or adverse effects.”*

—Fourth National Report on Human Exposure to Environmental Contaminants (CDC, 2009)

<http://www.cdc.gov/exposurereport/pdf/FourthReport.pdf>

# Questions?

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# Background Information

- The PSG is composed of Lockheed Martin Corporation, Aerojet General Corporation, ATK, and American Pacific Corporation.
- Intertox has been providing scientific assessments for the Perchlorate Study Group (PSG) since 1999.
- Intertox has worked with many scientists regarding a science-based understanding of the possible human health impacts of environmental levels of perchlorate.

*Please see the Intertox Report for more information.*