



Alternatives Analysis Criteria for Consideration October 2012



California
Environmental
Protection Agency



Department of
Toxic Substances
Control



Outline

- Review of key AA provisions found in AB 1879
- Review of OEHHA Hazard Trait regulations
- Definitions in Proposed SCP regulations
- Adverse Impacts





ALTERNATIVES ANALYSIS GOALS

HSC 25253(a)

- (1) ...Establish a **process** by which chemicals of concern in products, and their potential alternatives, are **evaluated** to determine how best to limit exposure or to reduce the level of hazard posed by a chemical of concern.
- (2) ...Establish a **process** that includes an evaluation of the availability of potential alternatives and potential hazards posed by those alternatives, as well as an evaluation of critical exposure pathways. This process shall include **life cycle assessment** tools that take into account the (a)-(m) criteria.





LIFE CYCLE ASSESSMENT TOOLS

H&SC 25253(a)(2)

- Process shall include **life cycle assessment** tools considering ((a) – (m) criteria):
 - a) Product function
 - b) Useful life
 - c) Resource consumption
 - d) Water conservation
 - e) Water quality impacts
 - f) Air emissions
 - g) Energy use
 - h) Energy efficiency
 - i) Greenhouse gas emissions
 - j) Waste and end-of-life disposal
 - k) Public health impacts
 - l) Environmental impacts
 - m) Economic impacts





OEHHA HAZARD TRAIT CRITERIA H&SC 25252(b)

- Office of Environmental Health Hazard Assessment was required to specify the hazard traits (toxicological, environmental, exposure potential, and physical), toxicological and environmental endpoints and other relevant data.
- Regulation adopted January 19, 2012, chapter 54 of title 22, California Code of Regulations.



OEHHA'S GREEN CHEMISTRY - HAZARD TRAITS

- Article 1- Definitions
- Article 2 - Toxicological Hazard Traits
 - **Carcinogenicity, Developmental Toxicity, and Reproductive Toxicity**
- Article 3- Toxicological Hazard Traits
- Article 4 - Environmental Hazard Traits
- Article 5 - Exposure Potential Hazard Traits
- Article 6 - Physical Hazard Traits





OEHHA Definitions (Art. I)

Adverse Effects

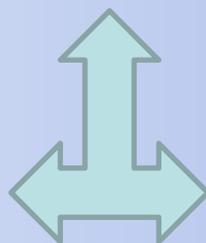
Changes \Rightarrow Negative effect \Rightarrow Ecosystem, population, species...

Hazard Traits

Characteristics of chemicals that may contribute to this negative effect in exposed humans, animals or ecosystems

Tox Endpoint

Measured or observed adverse effect in biological systems in the presence of a hazard trait



Env Endpoint

Measured or observed adverse environmental effect in ecological or non-human organisms in the presence of a hazard trait





TOXICOLOGICAL HAZARD TRAITS OEHHA (Art. 2 & 3)

1. Carcinogenicity
2. Developmental Toxicity
3. Reproductive Toxicity
4. Cardiovascular Toxicity
5. Dermatotoxicity
6. Endocrine Toxicity
7. Epigenetic Toxicity
8. Genotoxicity
9. Hematotoxicity
10. Hepatotoxicity/Digestive System Toxicity
11. Immunotoxicity
12. Musculoskeletal Toxicity
13. Nephrotoxicity
14. Neurodevelopmental Toxicity
15. Neurotoxicity
16. Ocular Toxicity
17. Ototoxicity
18. Reactivity in Biological Systems
19. Respiratory Toxicity
20. Other Toxicological Hazard Traits



Toxicological Hazard Traits

Developmental Toxicity

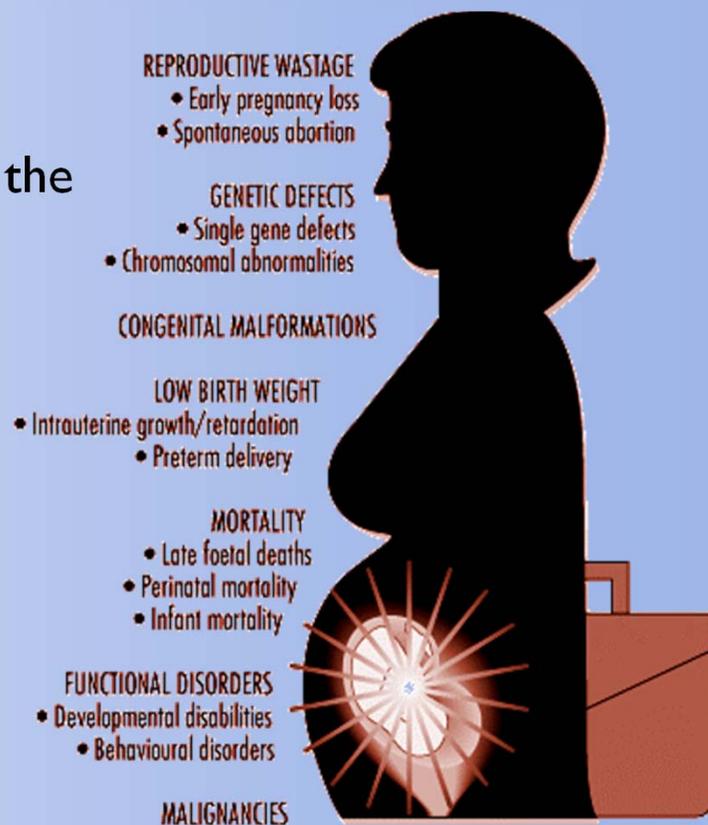
Occurrence of adverse effects on the developing organism

Toxicological endpoints:

- Death of developing organism
- Structural abnormality
- Altered growth
- Functional deficiency

Evidence:

Strong-e.g. meeting the National Toxicology Program criteria





Life Cycle Assessment Tools (a)-(m) & the Proposed SCP Definitions

- “Functionally Acceptable”
- “Useful Life”
- “Materials and Resource Consumption”
(includes water & energy)
- “Waste & End-of-Life Disposal”
- “Technically & Economically Feasible Alternative”
- “Adverse Public Health and Environmental Impacts”





Proposed Regulatory Definitions **“Adverse Public Health and Environmental Impacts”**

- “Adverse Public Health and Environmental Impacts” or “Adverse Impacts” means
 - Adverse Public Health, and
 - Adverse Environmental Impacts.





Proposed Regulatory Definitions **“Adverse Public Health Impacts”**

- “Adverse public health impacts” means any of the following:
 - OEHHA regulations
 - Exceedance of an enforceable California or federal regulatory standard relating to the protection of public health.
 - Public health includes occupational health.





Proposed Regulatory Definitions **“Adverse Environmental Impacts”**

- means any of the following:
 - Adverse air quality impacts;
 - Adverse water quality impacts;
 - Adverse soil quality impacts;
 - Adverse ecological impacts; or
 - Exceedance of an enforceable California or federal regulatory standard relating to the protection of the environment.



Proposed Regulatory Definitions **“Adverse Air Impacts”**

- means air emissions of any of the air contaminants listed below that have the ability to result in adverse public health, ecological, soil, or water impacts:
 - California Toxic Air Contaminants;
 - Greenhouse gases; or gases that exhibit the global warming potential hazard trait (OEHHA);
 - Nitrogen oxides;
 - Particulate matter (OEHHA);
 - Stratospheric ozone depletion potential chemicals (OEHHA);
 - Sulfur oxides; or
 - Tropospheric ozone-forming compounds (OEHHA).





Proposed Regulatory Definitions **“Adverse Water Quality Impacts”**

- means any of the following adverse effects on the beneficial uses, of groundwater, fresh water, brackish water, marsh lands, wetlands, or coastal bodies or systems:
 - Increase in biological oxygen demand;
 - Increase in chemical oxygen demand;
 - Increase in temperature;
 - Increase in total dissolved solids; or
 - Introduction or increase in, any of the following:
 - 1. Priority toxic pollutants (303(c) of the CWA);
 - 2. Pollutants listed for water bodies (303(d) of the CWA);
 - 3. Chemicals with Maximum Contaminant Levels (MCLs);
 - 4. Chemicals with Notification Levels (NLs); or
 - 5. Chemicals with public health goals for drinking water.





Proposed Regulatory Definitions **“Adverse Soil Quality Impacts”**

- means any of the following effects on soil function or properties:
 - Compaction or other structural changes;
 - Erosion;
 - Loss of organic matter; or
 - Soil sealing.





Proposed Regulatory Definitions **“Adverse Ecological Impacts”**

- Means any of the following direct or indirect effects on living organisms and their environments:
 - Adverse impacts to aquatic, avian, or terrestrial animal or plant organisms or microbes;
 - Adverse impacts on aquatic and terrestrial ecosystems;
 - Biological or chemical contamination of soils;
 - Any other adverse effect for environmental hazard traits and endpoints (OEHHA, art 4).



“Adverse Ecological Impacts” Includes OEHHA Environmental Health Hazards (Art. 4)

- Domesticated Animal Toxicity
- Eutrophication
- Impairment of Waste Management Organisms
- Loss of Genetic Diversity, Including Biodiversity
- Phytotoxicity
- Wildlife Developmental Impairment
- Wildlife Growth Impairment
- Wildlife Reproductive Impairment
- Wildlife Survival Impairment
- Evidence for the Environmental Hazard Traits





Proposed Safer Consumer Products Alternatives Analysis

- Triggered
 - when a Priority Product is listed: A Priority Product is the combination of a chemical of concern in a consumer product
- Process:
 - specified by proposed regulation
- Approach:
 - Focused on (a) –(m) criteria
 - Informed by guidance
- Decision rules:
 - Assigned by Responsible Entities





Recap

- AB 1879 requires a process that includes
 - Life Cycle Assessment
 - Evaluation of (a) – (m) criteria
- Definitions
 - OEHHA hazard traits
 - Proposed SCP regulation
- Guidance



Questions?

Evelia Rodriguez

erodrigu@dtsc.ca.gov

(916) 327-6104

