

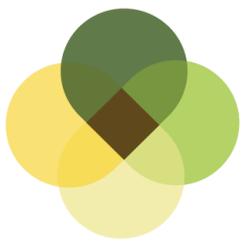
Proposed Screening Methodology for Cumulative Impacts



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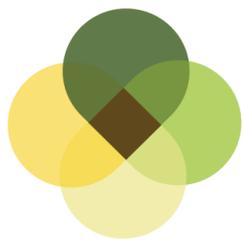
Cumulative Impacts & Precautionary
Approaches Work Group Meeting

June 3, 2010



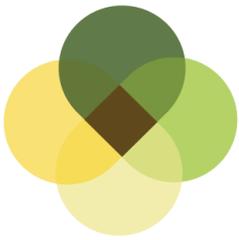
Working Definition of Cumulative Impacts

*"Cumulative impacts means **exposures, public health** or **environmental effects** from the combined emissions and discharges, in a geographic area, including environmental pollution from all sources, whether single or multi-media, routinely, accidentally, or otherwise released. Impacts will take into account **sensitive populations** and **socio-economic factors**, where applicable, and to the extent data are available."*

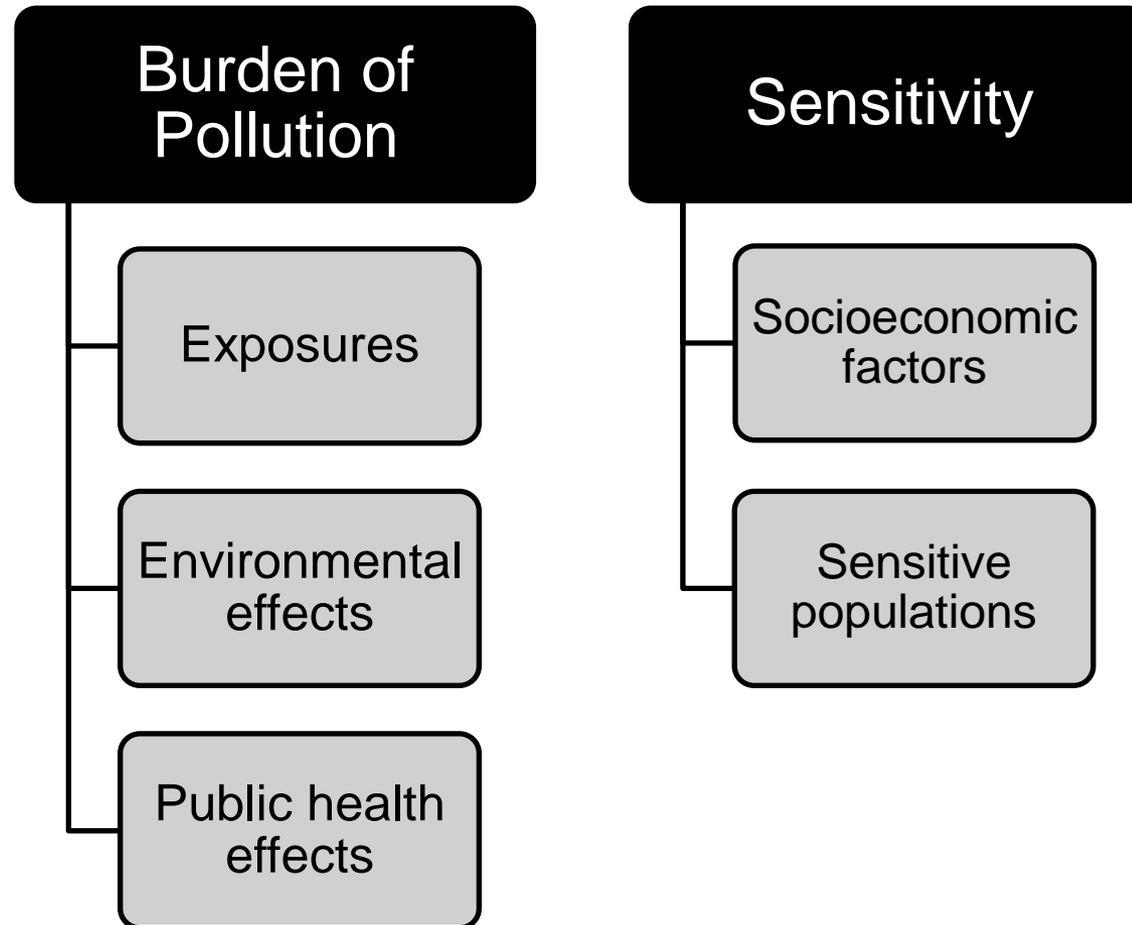


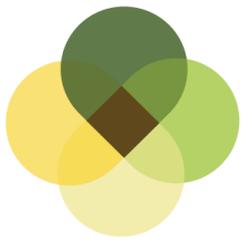
A Proposed CI Screening Methodology

- Based on the definition
- Science-based
- Simple and understandable
- Multi-media
- Incorporates socioeconomic factors
- Makes use of existing statewide data



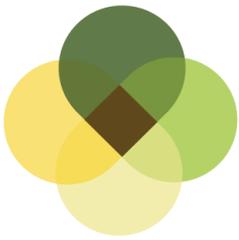
Components of Cumulative Impact





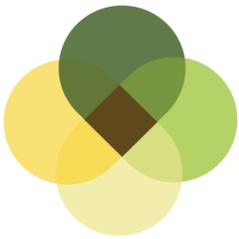
Meaning of the Terms

- **“Exposures”**: Contact with pollutants
 - *e.g.*, ozone levels
- **“Public health effects”**: Health conditions potentially influenced by exposures
 - *e.g.*, low birth weight, cardiovascular disease, cancer, asthma
- **“Environmental effects”**: Conditions that could affect human or ecological health
 - *e.g.*, waste sites, Brownfields



Meaning of the Terms (cont.)

- **“Sensitive populations”**
 - *e.g.*, children, elderly
- **“Socioeconomic factors”**
 - *e.g.*, income level



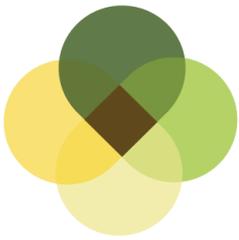
Relationship

Cumulative impacts need to take into account exposure and health impacts as well as sensitive populations and socioeconomic factors.

Therefore:

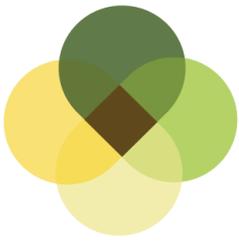
Cumulative Impact = Pollution Burden x Sensitivity





Numerical Ranking

Component	Range of Possible Scores
Contributors to <i>Sensitivity</i>	2 – 6
Socioeconomic factors	1 – 3
Sensitive populations	1 – 3
Contributors to <i>Pollution Burden</i>	3 – 30
Exposures	1 – 10
Environmental effects	1 – 5
Public health effects	1 – 5
Composite Score	6 – 120

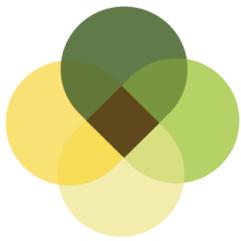


Hypothetical Ranking Based on Cumulative Impact Scores

Component	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A A	B B	
Contributors to Pollution Burden	15	14	16	13	13	13	14	13	12	12	11	11	13	8	12	9	11	10	10	9	7	11	10	7	8	6	8	6	
Exposures	7	5	8	7	6	4	7	6	8	3	6	6	5	4	6	4	7	7	4	3	3	5	4	4	5	4	5	3	
Public Health Effects	5	5	5	3	4	5	3	5	3	4	3	4	3	3	1	3	3	2	3	2	2	4	3	2	2	1	1	2	
Environmental Effects	3	4	3	3	3	4	4	2	1	5	2	1	5	1	5	2	1	1	3	4	2	2	3	1	1	1	2	1	
Contributors to Sensitivity	6	6	5	6	6	6	5	5	5	5	5	5	4	6	4	5	4	4	4	4	4	5	3	3	4	3	4	3	3
Sensitive Populations	3	3	2	3	3	3	2	2	2	2	2	3	2	3	2	3	2	2	2	2	2	2	2	2	2	2	2	1	
Socioeconomic Factors	3	3	3	3	3	3	3	3	3	3	3	2	2	3	2	2	2	2	2	2	2	3	1	1	2	1	2	1	2
Composite Score	90	84	80	78	78	78	70	65	60	60	55	55	52	48	48	45	44	40	40	36	35	33	30	28	24	24	24	18	

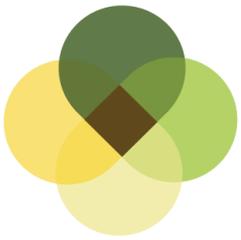
Preview of Work on Precautionary Approaches





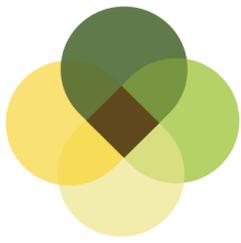
Working Definition of Precautionary Approaches

*"Precautionary approach means taking **anticipatory action** to protect public health or the environment if a **reasonable threat of serious harm** exists based upon the **best available science and other relevant information**, even if absolute and undisputed scientific evidence is not available to assess the exact nature and extent of risk."*



Terms and Definitions

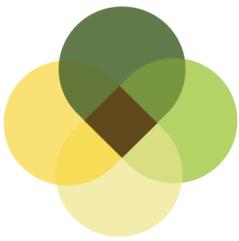
- Anticipatory Action
- Threat of Serious Harm
- Best Available Science and Other Relevant Data



Anticipatory action

*"Precautionary approach means taking **anticipatory action** to protect public health or the environment..."*

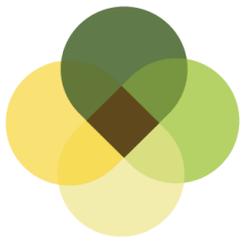
- *Action taken to deal with a situation beforehand; act to mitigate or prevent*
 - May range from no action to outright ban
 - Taken before certainty of cause and effect
 - Relies on sound science as well as community knowledge and other relevant information
 - Should be monitored for new scientific research and/or impact of action
 - Re-examine and modify action as necessary



Threat of serious harm

“...if a reasonable **threat of serious harm** exists...”

- *An indication or warning of probable harm*
 - Encompasses a wide range of effects and severity, both to human health and the environment
 - Includes disproportionate exposures among different populations



Best available science...

“...based upon the **best available science and other relevant information...**”

- *Body of sound scientific and other relevant information that can establish the plausibility of serious harm or provide compelling evidence to support the validity of a scientific theory*
 - Hazard traits
 - Surveillance data
 - Community knowledge
 - Other red flags