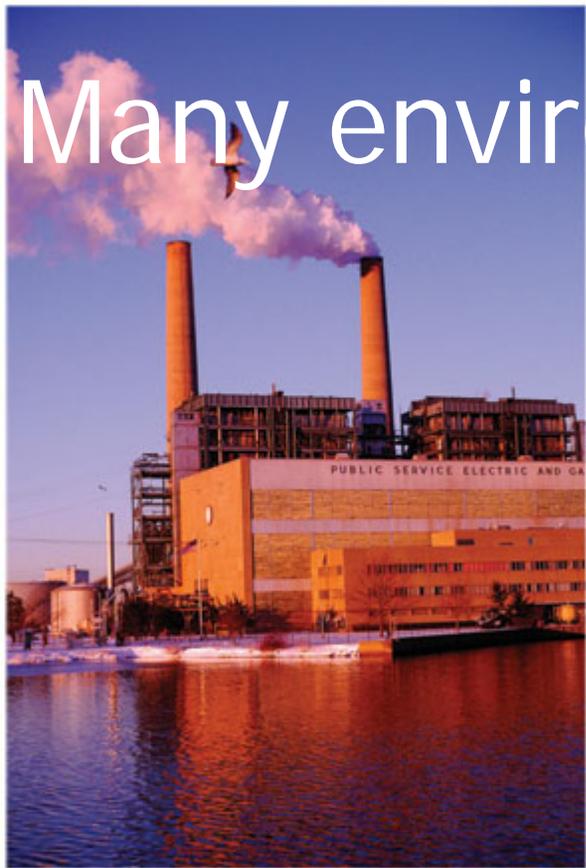


Addressing cumulative impacts

Bay Area Air Quality Management District
March 5, 2009

Amy D. Kyle, PhD MPH
University of California Berkeley
School of Public Health
<adkyle@berkeley.edu>

Many environmental factors



We experience the environment in particular places



Port of Oakland

What we do now

- Pollutant by pollutant
- Source by source
- Single medium (air or water or food)

Current policy model

- Control individual pollutants to achieve public health for the group
 - Level without appreciable risk
 - Each one separately
- Adopted based on science of 1970s
- Has led to great progress
- Uses quantitative methods

Agreement we need to rethink

- National Academy of Sciences -- Science and Decisions
- Recommends development of capacity to address cumulative risks and impacts
- Include non-chemical stressors, vulnerability, defaults

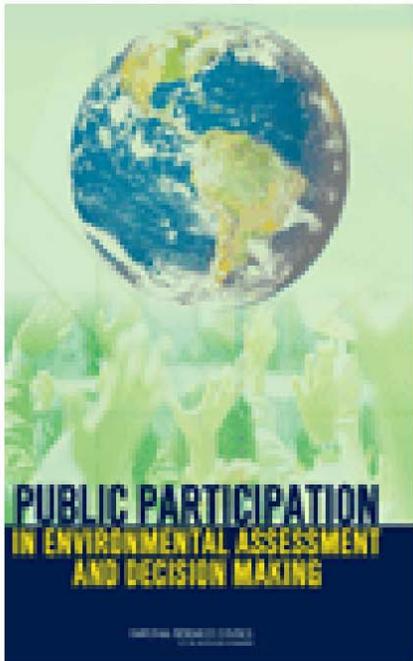
Public Participation in Environmental Assessment and Decision Making (Free Executive Summary)
<http://www.nap.edu/catalog/12434.html>

Free Executive Summary

Public Participation in Environmental Assessment and Decision Making

Thomas Dietz and Paul C. Stern, Editors, Panel on Public Participation in Environmental Assessment and Decision Making, National Research Council

ISBN: 978-0-309-12398-3, 322 pages, 6 x 9, paperback (2008)



Newer scientific knowledge

- Common pathways for effects that involve many compounds
- Some people much more sensitive
- Children often more sensitive
- Health disparities are significant and partly related to environment
- Increases in environmental diseases

Environmental factors

- Contaminant source approach
 - Air pollution (indoor and outdoor), water pollution, drinking water, land contamination (sites)
 - Dusts (indoors) and soils (outdoors)
 - Consumer products, workplaces
- Positive factors
 - Green space, access to recreation areas, walkability

Environmental factors II

- Positive factors

- Green space and natural areas

- Increase markers related to health and well-being
 - Very recent results (2008)

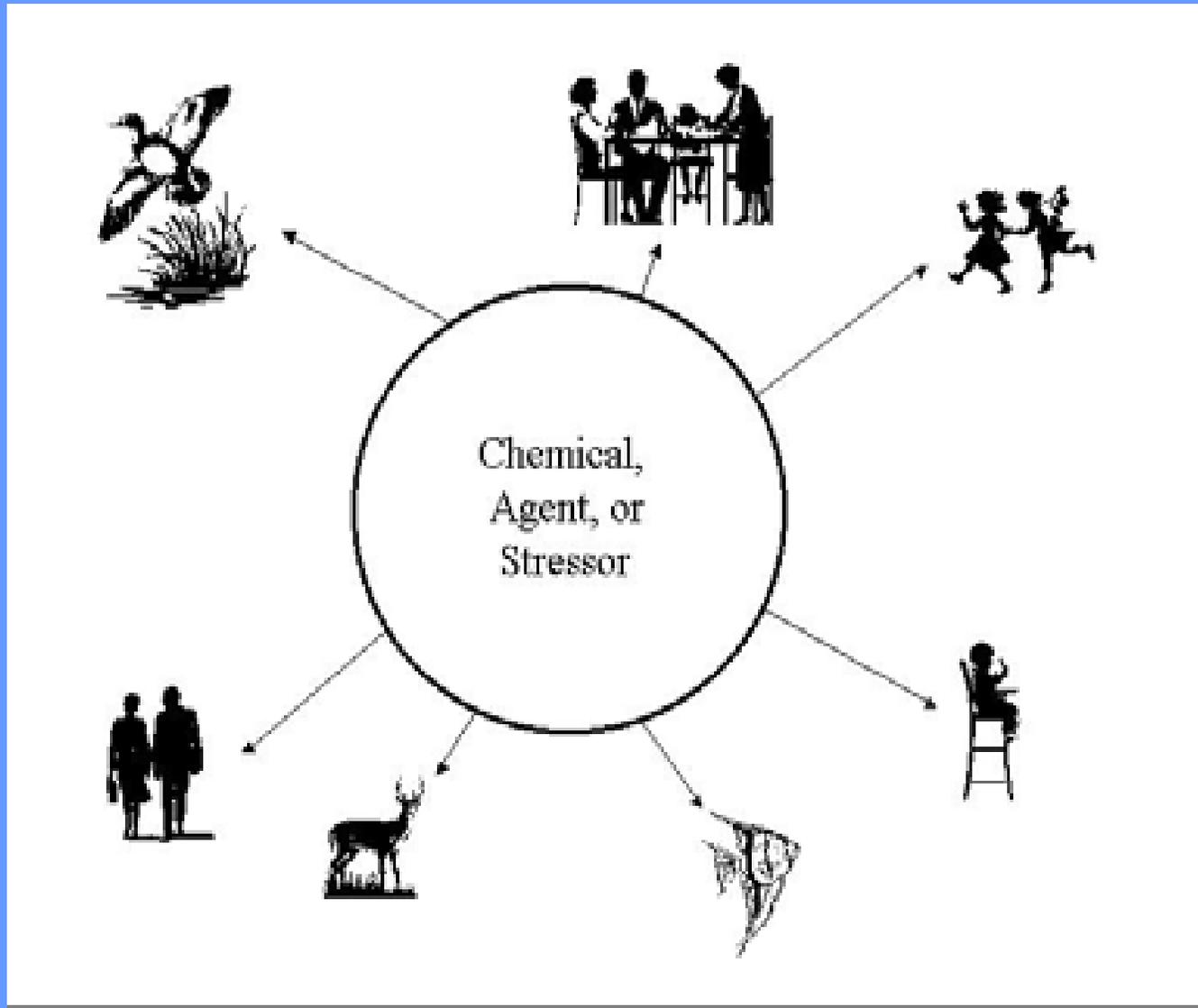
- Design of built environment

- access to recreation areas
 - walkability

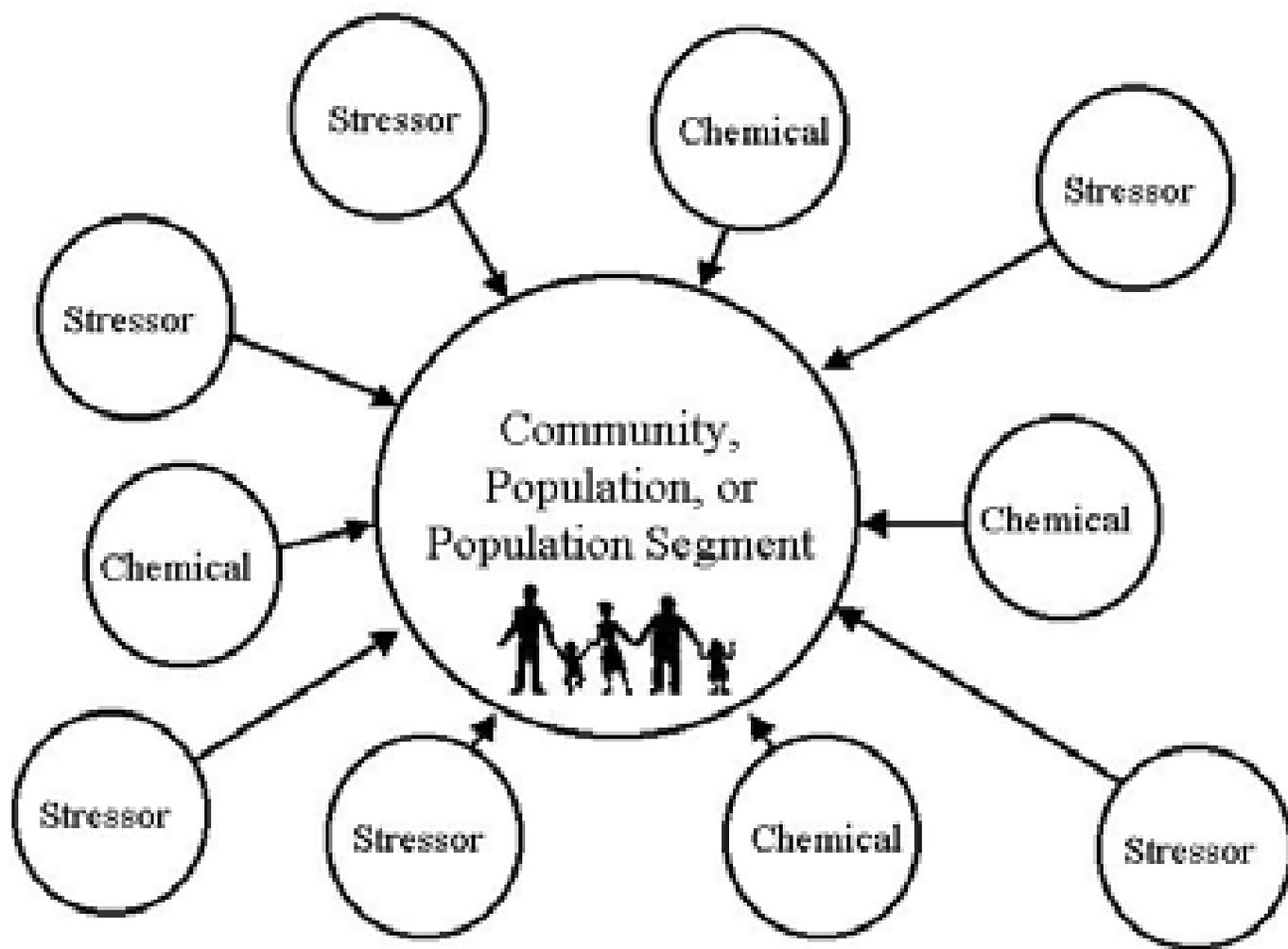
Non-environmental factors

- People and communities
 - Vulnerability (e. g., poverty)
 - Health status (elevated disease)
 - Resources and resiliency
- All interact with environment

Change focus: from “single agent or stressor”



Change focus: to what happens in communities





California Environmental Protection Agency

OCTOBER 2004 ENVIRONMENTAL JUSTICE ACTION PLAN

Cal EPA Working definitions

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

Impacts will take into account sensitive populations and socio-economic factors, where applicable and to the extent data are available.

Cal EPA Working definitions

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.

Beyond environmental factors

- People and communities
 - Vulnerability (e. g., poverty)
 - Health status (elevated disease)
 - Resources and resiliency
- All interact with environment

Consider inequality?

- Do you want to quantify differences among groups
 - Race/ethnicity, income or socio economic status
- Does this matter in addition to magnitude of burden?

Sensitivity

- Key concept for CIPA project
- Reflects this idea of variability in response
 - Intrinsic susceptibility
 - Vulnerability at community or individual level (not intrinsic biology)

Assessment approaches

- Area-based "screening" assessment
 - Go through to identify areas of concern
 - Could be based on scope identified
 - Could be based on available tools
 - Pastor et al. tool for ARB
 - US EPA EJ SEAT
- Context based assessment

How to aggregate

- Quantitative methods
 - US EPA cumulative risk assessment for pesticides
- Adaptation of risk methods
 - ARB hot spots program - additive
- Devise new quantitative methods
 - Research needed on this

>> Toward tangible actions

- *Scope*
- *Assessment approach*
- *How to aggregate*
- *Actions*

What to do differently?

- Target resources
- Limit new stressors
- Enhance positive factors
- Remediate existing burden
- Enforce laws
- Develop new standards
- Etc.

Conclusion

- Many environmental factors
 - Not all separate or independent
- Defensible but not perfect assessment approaches
- How to apply to actions
- Supports sustainable community



Amy D. Kyle <adkyle@berkeley.edu>