Conference on ENVIRONMENTAL PROTECTION INDICATORS FOR CALIFORNIA

January 18, 2001

BREAK-OUT SESSION: ISSUES IDENTIFIED

Participants were organized into break-out groups, and asked to generate responses to the following question:

What are the significant environmental issues for California?

The issues identified by the break-out groups are listed below.

BREAK-OUT GROUP: AIR

- Global issues
  - Global warming (CFCs)
  - Ozone depletion
  - Other transboundary issues
- Ambient air quality
  - Criteria pollutants
  - Toxics
  - Per capita use of energy sources (natural gas, wood burning stoves)
- Indoor air
  - Life-cycle pricing
  - VOCs
- Agricultural/forestry impacts
- Health effects
  - Criteria pollutants
  - Toxics
  - Biologicals
- Ecological impacts
- Eutrophication
- Acid deposition
- Aesthetics
  - Visibility
  - Odor
  - People's perception
- Cross-media issues

BREAK-OUT GROUP: LAND AND OTHER MEDIA

- Rapid urbanization due to population growth and consequent loss of open space and agricultural land
- Loss of wildlife habitat
- Actual characterization of waste
- Noise pollution
- Spread of exotic flora and fauna
- Re-use of old/abandoned buildings vs. new construction
- Brownfield development
- Development in rapidly growing areas (green development)
- Increasing consumption of transportation fuels
- Loss of bio-diversity
- Community-based agriculture (people and land connection, cooperative farming)
- Increasing use of pesticides by small farms (chemical dependency of corporate agriculture)
- Loss of land due to solid and hazardous waste disposal
- Illegal disposal of waste
- Uniform assessment of human health risks from naturally occurring elements
- Over-packaging of consumer goods (disposable society)
- Ozone depletion
- Urban area development, low-density sprawl
- Toxic materials prohibiting re-use of construction and demolition
- Releases or accidental spills
- Failure of regional planning
- Increasing education about household wastes
- Review, revision or repeal of local/state/regional laws that inhibit innovation
- Bio-genetic engineering impacts on wild lands and crops
- Air quality decline as a result of sprawl
- Problems with product design that prevents re-use
- Lack of planning on an ecological basis
- Determining acceptable pollution levels considering ecological, economic and social impacts
- Rights of non-human species
- Limit economic impacts on existing business when approving occupancy in industrial zones
- Increasing public education
- Cross-contamination into other media
- Erosion
- Kesterson (naturally occurring contaminants)
- Assessment or lack of definition of source reduction
- Environmental performance of solid waste landfills
- Electromagnetic fields and their health effects

- Burden of dealing with waste falls on the consumer
- Subsidies that encourage the wrong type of behavior
- Changing the way people think toward a greener ethic (and identification of success stories)
- Lifestyle, land use and transportation impacts on an Internet society
- Promoting technology to allow processing of toxics through permitted facilities
- Waste to energy issues (e.g., burning tires for energy)
- Unlined landfills
- Most goods are not recyclable or not recycled
- Hazards of recycling (worker exposure and environmental impacts)
- Impacts of Proposition 13 on local land use and local regulation
- How to put a price on something priceless
- Medical waste
- Re-thinking regulations
- Inefficient use of water
- Abandoned mines
- Negative impacts of conservation on growth
- Long term consequences of landfills
- Lack of biological elements in local land use plans
- Political “contributions” to decision makers

BREAK-OUT GROUP: WATER (1)

Groundwater Issues

- Chemical contaminants
  - MTBE
- Seawater intrusion/sea-level rise
- Non-point source contamination
  - Agricultural run-off
  - Urban run-off
  - Septic tanks
- Groundwater overdraft
- Water conservation (surface water and groundwater)
- Surface activities affecting groundwater quality
  - Leaching
- Environmental justice (surface water and groundwater)
- Hazardous waste sites (clean-up/surface water and groundwater)
- Non-hazardous waste sites (surface water and groundwater)
- Inappropriate disposal of household waste
- Water reclamation/recycled water
  - Potable reuse
- Bio-solids
- Private well monitoring requirements
- Risk-based clean-up
- Public drinking water supply quality
- Fertilizers, nitrates, animal wastes, dairies, etc. (surface water and groundwater)

Surface Water Issues

- Achieving fishable/swimmable water quality
- Biological baseline for biodiversity
- Disinfectant by-products heath risks
- Endangered species
- Seawater intrusion
- Non-point source water contaminants
  - Agricultural run-off
  - Urban run-off
  - Septic tanks
- Water rights transfers
- Abandoned mines
  - Metals
  - Sediments
  - Mercury
  - Bioaccumulation
- Achievability of permitted toxicity test standards

- Need for more real-time water quality data for recreation and shellfish
- Impact of population growth on water quality and supply
- Economic impacts of degraded water quality and regulations
    - Agriculture
    - Municipal
    - Industrial
    - Recreation
- Acid rain and air deposition (e.g., dioxins and furans)
- Naturally occurring contaminants (surface water and groundwater)
- Importing “exotic” species
- Proliferation of on-site septic systems in outer areas
- Erosion and sedimentation
- Economic impacts of new storm water ordinances
- Contamination by fuel from inefficient engines on boats
- Inappropriate disposal of household wastes
- Inappropriate disposal of waste from boating activities
- Floods
- Bio-solids
- Impacts of water diversions
- Inconsistent or no standards for different groups (level playing field)
- Impacts of climate changes
- Droughts
- Water storage
- U.S./Mexico border health
    - Drinking water quality
    - Transboundary issues/international trade restrictions
- Hot spots
- Sewage overflows/spills
- Impacts of dredging and configuring waterways
- Port operations
- Pipelines
- Fuels management
- Transportation
- Point source discharges
    - Wastewater plants
- Bioaccumulation
    - Ecological
    - Human health (consumable)

<u>General Issues</u>

- Loss of wildlife habitat
- Loss of agricultural lands (watersheds, wetlands)
- Endangered Species Act
- Alternative uses for agricultural waste

- Different measurements for regulatory success (environmental improvement vs. command and control)
- Coordinated California-wide environmental goals across the agency

General Non-Water Issues

- Facility-based permitting system rather than multiple transmitting system
- Pragmatic multimedia risk assessment and management
- Global warming
- Quality of wild lands
- Environmental regulatory compliance – multimedia
- Depletion of natural resources
- Environmental assistance to small businesses

BREAKOUT GROUP: WATER (2)

Summary

1. Sources of "Pollutants" (chemicals, biological, physical)
2. Supply
3. Beneficial uses
   - Migration/spawning
   - Fish/shellfish
   - Aquatic life
   - Drinking water
   - Recreation/swimming
   - Navigation
   - Agriculture/irrigation
   - Aquaculture
   - Industrial water supply
4. Hydromodification
5. Habitat loss/degradation

1. *Sources of Pollutants*
   - Meetings standards for storm water
   - Septic tanks
   - Chemical use before understanding unassessed chemicals (e.g. MTBE)
   - Trace chemicals in wastewater (hormones, pharmaceuticals, endocrine disruptors)
   - Fish stocking
   - Atmospheric deposition
   - Watershed protection
   - Lead pipes
   - Soil lead/air deposition
   - Logging impacts on water
   - Grazing impacts on water
   - Arsenic—costs and perceptions
   - Desalination
   - Sea water intrusion
   - Dredging (legacy resuspension disposal)
   - Ballast water (exotic species/pathogens)
   - Coatings (TBT)
   - Runoff
   - Dairies, stables
   - Effluent dominated water bodies
   - Mining
     - Historic
     - Contemporary
   - Legacy contaminants

- TCE/PCE—drycleaners
- Land application of treated wastewater
- Sewering of non-sewered communities
- MTBE/chemical contaminants
- Oil spills/other spills
- Sewage spills
    - Infrastructure failure
- Flood control
- Beaches
    - Freshwater
    - Saltwater
- Sediment
- Eutrophication
- Additivity/Synergy
    - Contaminants and habitat effects
    - Limits of science to address mixtures

2. *Supply*
    - Water conservation efforts
        - ↑ wastewater
        - ↓ wastewater
    - Graywater use/standards
    - Cost (private sector)
        - Cost/Benefit
        - Define problems
    - Transport, storage
    - Population, agriculture
    - Desalination
    - Energy costs related to production of water
    - Wheeling water
    - Water is money
    - Eco/social/cultural
        - Anthropogenic changes
            - Desert⇒Ag
    - Loss of recharge runoff
    - Identification of aquifers
        - Production
        - Quality
        - Quantity
    - Groundwater quality
        - Drinking water
    - Competing demands/allocation of water

3. *Beneficial Uses*
   - Pathogens
   - Trace chemicals in wastewater (hormones, pharmaceuticals, endocrine disruptors)
   - Stream health
   - Tracking pesticide data
   - Cost (private sector)
     - Cost/Benefit
     - Define problems
   - Equity of responsibility
   - Arsenic—costs and perceptions
   - Natural levels (bkgd) or metals
   - Navigation
   - Fisheries (recreational and commercial)
   - Fishable (edible?—bioaccumulation)
     - Endangered species
     - Population
   - Aquaculture (fuels, exotic species, lack of biodiversity)
   - Coastal management—coast morphology
     - Sea walls
   - Surface water
   - Aquatic life
   - Recreational uses
   - Fish/shellfish consumption
   - Pesticides/Ag contaminants
   - Trash
   - Protection of sensitive/special population
     - Eco
     - Health
     - Cultural (e.g. Acid mine drainage basin)
   - Nitrates—drinking water/water quality
   - Fish protection
     - Sediment—impairment
   - Bank stability
   - Sediment budget
     - Sand starvation
   - MTBE/chemical contaminants
   - Loss of recharge runoff
   - Beaches
     - Freshwater
     - Saltwater

- Identification of aquifers
  - Production
  - Quantity
  - Quality
- Groundwater quality
  - Drinking water
- Sediment
- Eutrophication
- Water quality for industry
- Temperature
- Protection of all beneficial uses
- Competing demands/allocation of water

4. *Hydromodification*
   - Marsh conversion
   - Flow alteration
   - Navigation
   - Flood control
   - Subsidence
   - Sediment

5. *Habitat loss/Degradation*
   - Wetlands loss
   - Marsh conversion
   - Sediment budget
     - Sand starvation
   - Sediment
   - Additivity/Synergy
     - Contaminants and habitat effects
     - Limits of science to address mixtures

Miscellaneous
- Education—use of toxic chemicals
- Funding, etc.
- Equity of responsibility
- Impact of non-degradation policy of indicators
- Farming issues
  - Land conversion, water supply, runoff
  - Dairies
  - Reclaimed water
  - Sludge and compost
  - Aerial deposition of pesticides

BREAK-OUT GROUP: HUMAN HEALTH

- Respiratory impairment
  - Inhalation of bad air (indoor and outdoor)
  - Occupational exposures
  - Substandard housing
  - Inadequate exercise
  - Lifestyle and personal habits
  - Disease exposure
  - Genetics
- Diseases that correlate to environmental factors (e.g., lead ingestion)
- Education and learning ability affected by environmental factors and chemical contaminants (number of absent days due to illness)
- Behavior may be correlated with environmental contaminants
- Persistent environmental chemicals accumulating in human body with potential adverse health effects
- Skin diseases may be associated with environmental exposures
- Human health is affected by inadequate food or non-healthful food
- Childhood diseases caused by environmental factors or of unknown origin (e.g., asthma and autism)
- Lifestyle (separation of home and work) and personal habits
- Reproductive health in relation to environmental chemicals (e.g., sperm count)
- Cancer may be caused by environmental contaminants
- Immune deficiency diseases
- Body burdens – what chemicals are accumulating in humans?
- Every child should be able to walk to school
- Primary environmental issues that determine and affect human health
  - Indoor and outdoor air quality
  - Substandard housing
  - Traffic noise
  - Water quality
  - Safe and healthy schools
  - Education
  - Safe and healthy food sources
  - Safe and healthy occupations
  - Safe liquid and solid waste disposal
  - Chemical exposure (e.g., lead and carcinogens)
  - Exposure to waste
  - Population growth
  - Lifestyle and personal habits
  - Stress
  - Misuse of antibiotics
  - Increased susceptibility
  - Diets
  - Infections

  - Genetics
  - Access to open space
  - Emotional health stressors
  - Technology (e.g., computers)
- Why so few chemicals are regulated
- Environmental justice
- Which emissions affect human health/biota
- Carrying capacity of the ecosystem

BREAK-OUT GROUP: ECOLOGICAL HEALTH

1. Extent and status of ecosystems in California

- land cover
  - connectivity
  - fragmentation
- land use

2. Preservation of ecological capital (biotic & abiotic raw materials)

- genetic diversity
  - pollution from escaped organisms
  - changes in mutation rate
- biodiversity
  - community structure & diversity
    - levels of competition, e.g., predation, disease, parasitism, mutualism
  - threatened and endangered species
  - invasive and exotic species
- quality and quantity of habitat
  - forest and rangeland
  - aquatic (lakes, rivers, estuaries, coastal)
    - flow and volume
    - temperature
    - hydro-period
    - physical characteristics
    - chemical characteristic
    - complexity
    - sedimentation and transport
    - dynamic channel morphology
  - urban ecosystems
    - viewshed - pollution by air, light, noise, visibility
  - climate change

3. Ecological function (productivity and other ecosystems processes)

- sustainability of ecosystems and resources
  - groundwater
  - fisheries
  - forests/rangelands
    - timber harvest
    - biodegradation
    - fires
    - pests
    - primary and secondary productivity
  - wildlife
  - energy flow
  - ecological footprint
- energy and nutrient dynamics
- ecological cycles
  - flooding
  - burning
  - global warming?

4. Human management of ecosystems

- recreation
- economic value
- urban greenspace and maintenance of natural conditions
- quality of living space and lifestyle (urban design concepts 'livable communities')
- civic engagement
- environmental awareness and education
- regional planning and resource management
  - full cost recovery
  - economic incentives
  - fragmentation of governments
- land use settlement
- population growth
- technology impacts
- management of disasters (e.g. oil spills)
- restoration efforts and their effectiveness
- ecological footprint
- aesthetics
  - preservation of animal species
  - preservation of open space/land/trees….

5. Other issues

- transboundary
  - US Mexico border
    - overlap with environmental justice
- trans-state
- international
  - climate change
- environmental justice

[Issues related to the development of indicators that came up during discussion:

- *Is it appropriate to use indicator species for biodiversity?*
- *What are appropriate scales for indicators?*
  - *issues*
  - *methodological considerations]*