

EPP 262, Principles of Environmental Health Sciences
Water and Wastewater – Part 3, A California Perspective

SPH 262
Principles of Environmental Health Sciences

Water and Wastewater
Part 3: A California Perspective

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**In California
 water is a
 limited and
 valuable
 resource**

EVERY DROP
 IS
 PRECIOUS

Water & California Government

- **Water supply and flood protection**
 - ◆ Department of Water Resources
- **Water rights**
 - ◆ State Water Resources Control Board
- **Drinking water**
 - ◆ Department of Public Health
- **Ambient water quality**
 - ◆ State Water Resources Control Board
 - ◆ 9 Regional Water Quality Control Boards ³

**Porter-Cologne
 Water Quality Control Act**

Adopted in 1969
 in Division 7 of California Water Code

- State Water Resources Control Board
- 9 Regional Water Quality Control Boards

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**State of California
 Water Quality
 Control Regions**

- 1 North Coast
- 2 San Francisco Bay
- 3 Central Coast
- 4 Los Angeles
- 5 Central Valley
- 6 Lahontan
- 7 Colorado River
- 8 Santa Ana
- 9 San Diego

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**Regional Water Quality Control Boards
 Activities to Protect Water Quality
 From Discharges of Waste**

- Water quality control planning
- Regulatory control
- Environmental monitoring
- Enforcement actions
- Watershed management
- Fund water quality improvement projects

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Water Quality Control Planning

- Set water quality standards for groundwater and surface waters
- Develop implementation plans to protect water from waste discharges
 - ◆ Industrial and municipal wastewaters
 - ◆ Urban runoff
 - ◆ Agricultural return flows
 - ◆ Mine drainage
 - ◆ Forest practices

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Water Quality Control Planning

- Review local agency programs for waste and materials management
 - ◆ Sewage pretreatment programs
 - ◆ Underground tank inspections
 - ◆ Well construction ordinances
 - ◆ Erosion control

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Regulatory Control

- Issue federal NPDES permits
 - ◆ Waste discharges to surface waters
 - ◆ Delegated authority under Clean Water Act
- Issue Waste Discharge Requirements
 - ◆ Landfills
 - ◆ Surface impoundments
 - ◆ Land treatment units
 - ◆ Other discharges of waste to land for treatment, storage or disposal

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Regulatory Control

- Require monitoring of waste management systems
 - ◆ Chemical and/or biological testing
 - Waste
 - Effluent
 - Leachate and soil gas
 - Receiving water
 - Surface water
 - Groundwater
 - Disposal area soil and soil moisture

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Regulatory Control

- Oversee cleanup of contaminated sites
 - ◆ Military bases
 - ◆ Industrial facilities
 - ◆ Underground storage tanks
 - ◆ Dairies
 - ◆ Pesticide applicators
 - ◆ Mining facilities

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Environmental Monitoring

- Groundwater sampling
 - ◆ Review well test results to locate pollutant sources
- Sampling of surface water and aquatic organisms
 - ◆ Locate areas affected by waste discharges
- Toxicity testing
 - ◆ Identify polluted waters
 - ◆ Identify unknown pollutants

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Enforcement Actions

- Address threats to water quality
 - ◆ From current or past waste discharges
- Issue cleanup and abatement orders
 - ◆ To direct dischargers or property owners to
 - Clean up pollution
 - Provide replacement water supply
- Issue cease and desist orders
 - ◆ For violations of waste discharge requirements

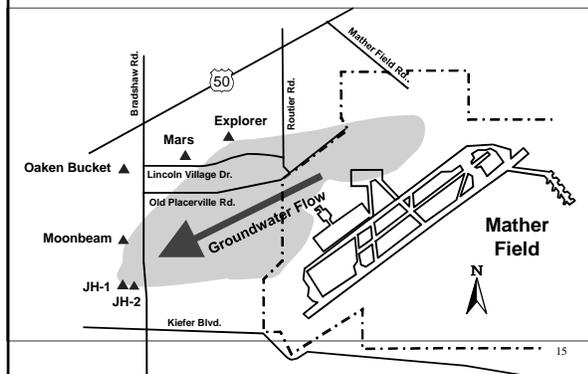
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Mather AFB, Sacramento

- Solvents leaked into groundwater
 - ◆ TCE, PCE, DCE & carbon tetrachloride
 - ◆ Probable human carcinogens
 - ◆ Plume extends off-base to west and north
 - Residential area
- Several municipal wells impacted

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Mather AFB Groundwater Plume



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Mather AFB, Sacramento

- Cleanup and Abatement Order
 - ◆ Replace impacted water supply
 - ◆ Contain solvent plume
 - ◆ Cleanup groundwater pollution

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Enforcement Actions

- Impose Administrative Civil Liability (ACL) fines
 - ◆ Up to \$5000 per day for violation of Board orders or discharge prohibitions
- Referral to the Attorney General
 - ◆ For civil liability or criminal prosecution in Superior Court

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Watershed Management

- Work with stakeholders
- Coordinate problem assessments
- Devise integrated solutions
- Allocate the discharge of pollutants among point and non-point sources
 - ◆ For surface water not attaining water quality standards
 - ◆ Total maximum daily loads (TMDLs)

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Total Maximum Daily Loads

- Section 303(d) of the federal Clean Water Act requires states to
 - ◆ Identify surface waters not meeting water quality standards
 - Impaired Water Bodies
 - ◆ Set priorities for identified problems
 - ◆ Establish a Total Maximum Daily Load (TMDL) for each water body / pollutant to attain water quality standards

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Total Maximum Daily Loads

- TMDL defined
 - ◆ Maximum load (e.g., kg/day) a water body can receive of a pollutant and still meet applicable water quality standards
- TMDL report
 - ◆ Describes load reductions needed to meet water quality standards
 - ◆ Allocates those reductions among the sources in the watershed

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Local TMDL Examples

- Central Valley Region-wide
 - ◆ Pesticides
- San Joaquin River
 - ◆ Salt and boron
 - ◆ Selenium
 - ◆ Dissolved oxygen
- Sacramento River
 - ◆ Cadmium, copper and zinc

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TMDL Examples

- Mercury
 - ◆ Clear Lake
 - ◆ Coast Range creeks
 - ◆ Sacramento-San Joaquin River Delta
 - ◆ San Francisco Bay

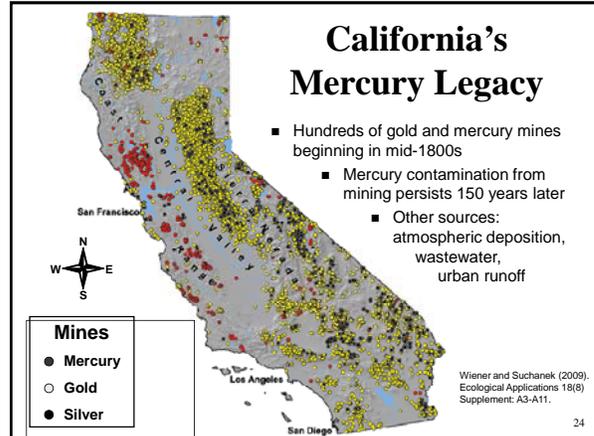
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California's Mercury Legacy

- Mercury mines in Coast Ranges
 - ◆ Sulfur Bank Mine at Clear Lake
- Gold mines in Sierras and Trinities
 - ◆ Mercury used to amalgamate gold
 - ◆ Used mercury dumped
- Conversion to methylmercury
 - ◆ Bioconcentration in food chain
 - ◆ Effects on humans and wildlife
 - Fish consumption rates

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California's Mercury Legacy



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My Water Quality
Internet Portals

www.CaWaterQuality.net



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REGIONAL WATER QUALITY CONTROL BOARDS

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