Geographic Information Systems – Enhancing Source Control for Emerging Pollutants of Concern

Division 640, Source Control
Orange County Sanitation District, California
Source Control Approach to Emerging Pollutants of Concern

- Pollutant Prioritization
- Pollutant Source Identification
- List of Priority Pollutants
- Source Control Strategies
- GIS Warehouse
- Program Effectiveness
Challenges Emerging Pollutants of Concern

- Regulatory mandate
- Over 20,000 commercial and industrial dischargers in OCSD’s service area
- Multiple assortment of compounds
- Ability to accurately track, trace, and respond to pollutant to source with limited resources
GIS to Optimize Management of Emerging Pollutants of Concern

What is GIS

Why GIS

- GIS enables “faster, better, cheaper” decision making
- Reveals spatial relationships of pollutant sources
- Accelerates field work planning
- Picture is worth 1000 words
Building Components using GIS to Enhance a Source Control Program

- Commercial/Industrial Chemical Inventory – Source Identification
- Chemical Fact Sheet
- Collection System Network
Commercial / Industrial Chemical Inventory – Source Identification

- California Department of Health Service
- Chemical Inventory Project - Identify Chemical and Sources
- Data Mining – CUPA and Data Vendor
- Search interface capabilities linked to GIS
Search Interface
Chemical Fact Sheet

1,1,1-Trichloroethane

CAS No.
71-55-6

CHEMICAL CLASSIFICATION
Not classifiable as a human carcinogen

CHEMICAL SYNTHESIS:
Alpha-T, Aerosol, FL; Aerosol TT; A13-0261; Algin; A140; Castrol No 875; CF 2; chlorobenzene; chloroform; chlozoixane; Chlorohene-N; Chlorohene N; Chloroform (Inhibited); Chloroform SM; Chloroform VG; Chloroform; Chlorohene-SU; Chloroform; Dowelene LS; Pentane Code: 001201; ethylene, 1,1,1-trichloro-, Gemlize; Gentex; ICI-CP 2; Indovox; methylchloroform; methylenechloroform; NCI-C04638; Solvent III; TCEA; Trichlor; Trichloroethane; alphachloroethane; Trimec

PROPERTIES
Molecular Weight: 133.42
Boiling Point: 74.0°C at 760 mm Hg
Specific Gravity: 1.32 at 20°C/4°C
LEL: Not identified
Solubility: 4,400 mg/L in water at 20°C; Soluble in all common organic solvents; Soluble in acetone, benzene, methanol, carbon tetrachloride, carbon disulfide

REGULATORY LIMITS
Maximum Contaminant Level: 0.2 mg/L
Detection Limit for Reporting Purposes: Not identified
Federal:
Drinking Water Standard: Not identified
Drinking Water Guidelines: 200 μg/L
California:
Advisory Action Level: N/A
Notification Level: N/A

EPA Health Advisory:

10 – 20°C
Not a skin hazard

California: Concentrations above 0.005 ppb not allowed

1,2,3-Trichloroethane

First use of 1,2,3-trichloroethane was in

NLM search

Not found to date
Collection Systems Network
426 miles regional trunk system
4800 miles local sewer

Orange County

Los Angeles
Buena Park
La Palma
Cypress
Stanton
Los Alamitos

Pacific Ocean
Pipeline
Reclamation Plant No. 1
Treatment Plant No. 2

Newport Beach
Fountain Valley
Costa Mesa
Newport Beach
Santa Ana
Westminster
Irvine
Tustin
Garden Grove
Orange
Anaheim
Brea
La Habra
Fullerton
Placentia
Yorba Linda

Stanton
Villa Park
Costa Mesa
Huntington Beach
Orange County

Seal Beach
GIS General Applications
Source Identification

GIS

Fact Sheets

Chemical Inventory

Source Identification
Source Identification
Source Identification

Commercial and Industrial Facilities

Plant 1

Plant 2
Source Identification
General Flow Trace
Specific Flow Trace
Managing Emerging Pollutant Many Challenges
GIS Benefits and Components
Practical Applications