Pharmaceuticals and Senate Bill 1757

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What are Pharmaceuticals?

- Prescription medications
- Over-the-counter drugs
- Veterinary medications

Examples:
- Antibiotics
- Anti-inflammatory (ibuprofen)
- Anti-depressants
- Anti-diabetics
- Stimulants (caffeine)
- Reproductive and thyroid hormones
Sources of Pharmaceuticals in Wastewater

Medicines consumed & not completely absorbed
→ Excretion, sweat & vomit

Unused/expired medication flushed

Disposal of wastes from health-care industry

Pharmaceuticals enter wastewater stream (WWTP or septic systems)
Fate in Wastewater Stream

- WWTPs never designed to remove these chemicals
- Pharmaceuticals can move through WWTP into surface waters
- Septic systems leak and transfer water & contaminants to groundwater
- These become our future drinking water supplies
Occurrence in Source Water

- Studies confirmed pharmaceuticals (& other emerging contaminants) do occur in US waterbodies (at low concentrations)

  - 139 streams tested for ‘emerging contaminants’; 30 States
  - 80% streams had detectable amounts of 1 or more of the chemicals
  - 50% streams contained 7 or more of the chemicals

  - 25 GW & 49 SW sources of PDW supply in 25 States & Puerto Rico
  - At least 1 emerging contaminant was detected in 96% of samples
Environmental/Health Impacts

• Ecological impacts have been observed
  • Feminization of fish; may impact species survival.
  • Note that aquatic life are continuously exposed (higher risk)

• Concerns of antibiotic-resistance

• No evidence of adverse health effects to humans
Pharmaceutical Removal/Reduction from Drinking Water Sources

TWO APPROACHES

TREATMENT APPROACH

Remove the pharmaceuticals AFTER they’ve entered the wastewater system

Requires improved WW treatment technologies

PREVENTION APPROACH

Prevent/reduce the amount entering to wastewater system

- Disposal programs
- Take-back programs
Intent of TX Senate Bill 1757

TWO APPROACHES

PREVENTION APPROACH

Prevent/reduce the amount entering to wastewater system

• Disposal programs
• Take-back programs
• Education

TREATMENT APPROACH

Remove the pharmaceuticals AFTER they’ve entered the wastewater system

Requires improved WW treatment technologies
Senate Bill 1757 Project

- TCEQ shall study and make recommendations regarding the methods to be used by consumers, health care providers, and others for disposing of unused pharmaceuticals so that they do not enter a wastewater system.

- Passed in May 2009

- Report due to legislature December 1, 2010
Intent of TX SB-1757

Medicines consumed & not completely absorbed
Excretion, sweat & vomit

Unused/expired medication flushed

Disposal of non-hazardous hospital wastes (also by pharmacies, physicians etc.)

FEWER Pharmaceuticals enter Wastewater System
Specifically, TCEQ shall consider:

1. the methods currently used in Texas (by consumers, health care providers, and others);

2. alternative methods used, including methods used in other states; and

3. the effects on public health and the environment of the various methods used for that purpose.
SB 1757 Study Team Approach

- Identify current State and Federal rules and regulations involved:
  - DEA (Controlled Substances Act)
  - RCRA (Federal Hazardous Waste regs)
  - Texas Administrative Code
  - Texas Health and Safety Code

- Identify stakeholders in TX:
  - Who disposes of pharmaceuticals?
  - Who regulates/controls disposal practices?
  - Who may be impacted by changes to the practices/regs?
  - Develop Advisory Group & understand issues faced

- Identify how pharmaceuticals are currently disposed of in TX:
  - Health-Care Providers vs. Consumers
  - What are the benefits of current methods? What should remain?
  - What needs to change? (Current constraints/concerns (non-compliance?))
  - Identify and fill knowledge gaps (possible survey)
SB 1757 Study Team Approach

- Identify **best approaches** used in other areas

  - **Consumers** - Some options to investigate:
    - Mail-back programs
    - Collection events
    - Drop-boxes
    - Education (posters, brochures, labeling)

  - **Health-Care Providers** - Some options to investigate:
    - Guidance documents for each type of provider
    - Better sorting practices and stock management
    - Disposal requirements in permits
    - Rule additions

- **Study Team must consider**:
  - Compliance with regulations (State, Federal, Local)
  - Effectiveness and efficiency in meeting goals
  - Impact on amount of pharmaceuticals entering wastewater
  - Impact on public health
  - Community desires
  - Resources required
  - Partnerships required
SB 1757 Study Team Approach

- Determine **how best approaches could work in TX**
  - Identify programs, tools, resources etc. that would be required
  - How will possible changes impact current regulations?
  - How would changes impact permitting of facilities?
  - What would be required from stakeholders?
  - Consider long-term program feasibility
  - Identify metrics for success
  - Estimate the impact of proposed approach on TX public health and the environment
TCEQ Study Team Contacts

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