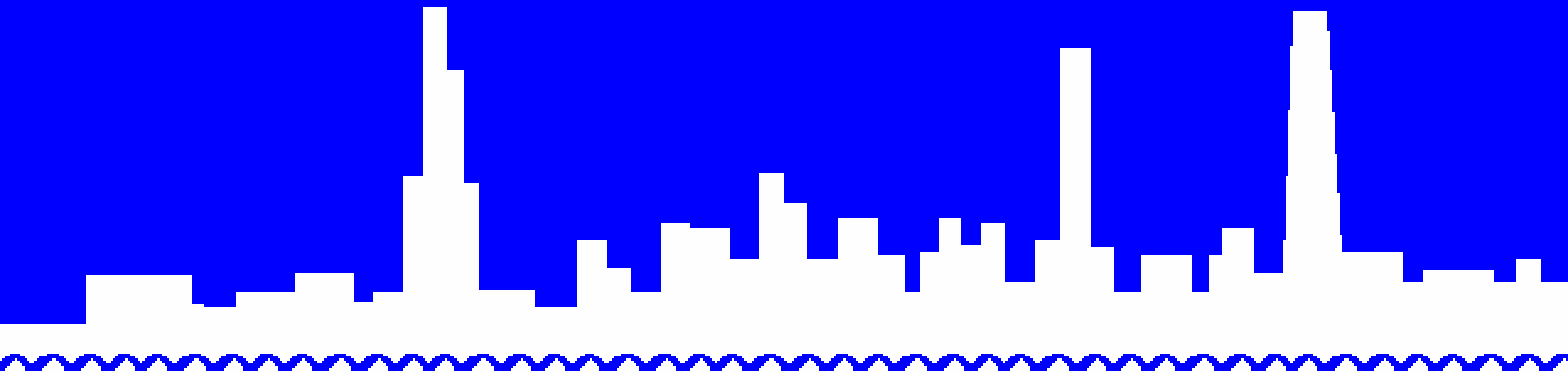


US EPA ARCHIVE DOCUMENT

# *Protecting Our Water Environment*



**Metropolitan Water Reclamation District of Greater Chicago**

**Working to Reduce Pharmaceuticals in Water Reclamation Plants**

**Catherine O'Connor, Ph.D., P.E.**

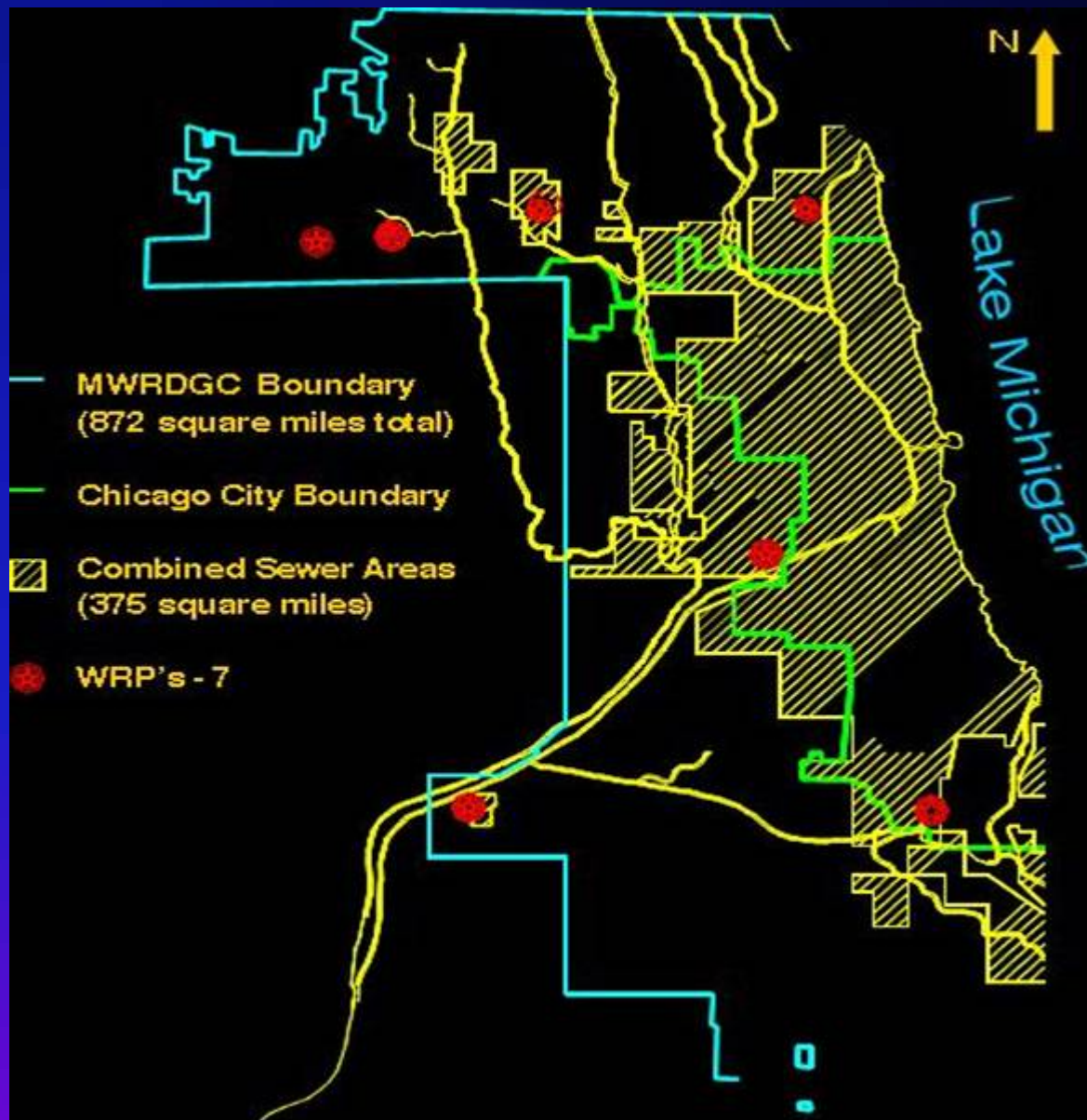
**August 25, 2005**

# Presentation Overview

- Chicago Water Reclamation Plants, Chicago Waterways
- Efforts to Reduce Pharmaceuticals
  - *Medication Disposal Program*
  - *Household Hazardous Waste Program*
- Cooperative Research
  - *APEs Study (USEPA Region V)*
  - *Antibiotic Resistant Bacteria (MWRDGC)*
  - *RARE (USEPA)*
  - *4-Nonylphenols in Land Applied Biosolids (University of Georgia)*
- Summary, Conclusions

## **MWRDGC's Mission**

**“ To protect Lake Michigan, Chicago’s prime drinking water supply, from pollution and to properly treat sewage to avoid contamination of the Chicago, Des Plaines and Illinois Rivers.”**



# AFTER CONSTRUCTION OF THE CANALS



# District Action Regarding Pharmaceuticals in the Environment

- Jan 18, 2004 - “Report on Disposal of Unused Pharmaceuticals”
  - *Follows scientific literature on issue, controls*
  - *Enter cooperative research with a number of agencies, universities*
  - *Construct molecular biology laboratory*
- Correspond with FDA, AMA and Pharmaceutical Research and Manufacturers Association (PHRMA) with call for action
- May 3, 2004 - Press Release: featured on several radio, TV broadcasts
- September 17, 2004 - Contact IEPA requesting support

# 2005 Medication Disposal Program

**Partnership MWRDGC; Chicago Police Department, Department of Public Health, Department of Aging; Cook County Sheriff's Department; Illinois Attorney General's Office**

- **Jan 7 - Letters to Township Supervisors**
- **Feb 8 - Initial Press Release sent to Townships**
- **April - Press Release to Media**
- **May 9 - Press Conference**
- **May 11 - Unwanted Medication Disposal Program at 24 Locations**
  - ***13 Suburban Townships***
  - ***11 City Locations***

**Outcome - > 1.5 Tons of Pharmaceuticals Collected!**



# **MWRDGC Household Hazardous Waste Collection Events**

- **Cooperative Effort with IEPA**
- **Typically Twice/ year; 2005 Three Times**
- **Various Locations in Chicagoland**
- **Advertised through news print, flyers distributed by individual communities**
- **Pharmaceuticals are specifically mentioned (medicines, not medical waste)**
- **Events average 380 (55 gallon drum equivalents)**
- **Events average 2,158 households/ event**

# Alkylphenol Ethoxylates (APEs) Study - USEPA Region V

- **Study initiated August 2003**
  - *Potential Sources of APEs (non-residential)*
  - *Appropriate APEs sampling protocol*
  - *Fate in the activated sludge process and in the environment*
- **Focused Sampling @ Manufacturing Facilities**
  - *Paint*
  - *Pharmaceuticals*
  - *Pesticides*
  - *Detergent*
  - *Emulsifier & Emulsifier Food*

# Alkylphenol Ethoxylates (APEs) Study - USEPA Region V (Continued)

- **MWRDGC Analyzed Effluent, Sludge and Target Industry Samples**
  - *5 Industries and 2 Sewer Interceptors*
  - *19 (24-hour Composite Samples) - Three consecutive days sampling*
  - *Analyze for 5 types of APEs*
  - *Detected One Time: 6 ug/L (Bisphenol A - Pharmaceutical Manufacturer)*

# Antibiotic Resistant Bacteria - MWRDGC

- **Goal: Understand Plant Influent and Effluent**
- **Three Hypothesis**
  - *Organisms are eliminated in treatment*
  - *Plant breeds organisms*
  - *Plant is conducive to organism survival*
- **Four Tests: ampicillin, tetracycline, gentamycin, and cocktail of all three**
- **All Seven Plants (Three Plant Chlorinate in Summer)**
- **Sampled Four Cycles: May, January '04, '05**
- **Data Currently Being Analyzed**

# **Regional Applied Research Effort (RARE)- Region V**

- **Mass Balance for Set of Persistent Bioaccumulative Toxics**
- **Track Inputs, Outputs, Chemical Transformations**
- **Investigate Minimizing PBTs**
- **Sampling at MWRDGC's Calumet WRP**
- **Sampling is On-going**
- **Schedule: Investigate Control Alternatives  
Spring/ Summer '06**

## 4-Nonylphenol Analysis of Biosolids (University of Georgia)

- **MWRDGC Analyzed Biosolids - Submitted Results**
  - *Two WRPs*
  - *Four Months*
- **Samples Also Submitted to Purdue University for Hormone, Steroid Analysis (analytical problems)**
- **Follow-up Analysis of Field Samples Where Biosolids Were Applied**

## Summary, Conclusions

- **MWRDGC Has Taken Steps to Limit Pharmaceuticals That Enter Collection System**
- **MWRDGC Cooperating with Agencies, Universities Regarding Fate, Effects of Pharmaceuticals and Endocrine Disruptors**
- **MWRDGC is Willing to do More!**





*MWRDGC*