

# Developing Analytical Methods for Drinking Water Contaminants

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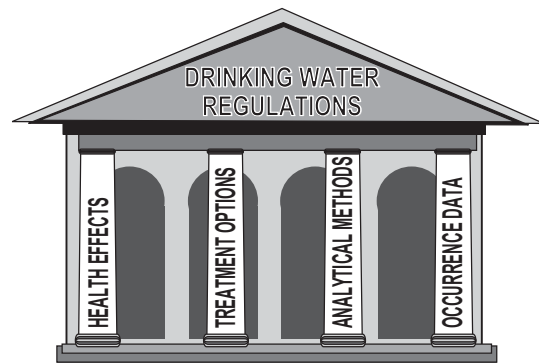
**Year of Water:  
Thirty Years of Progress  
Through Partnering**

## ENVIRONMENTAL ISSUE

### REGULATING CONTAMINANTS IN DRINKING WATER - THE PROCESS

- In 1996, Congress amended the Safe Drinking Water Act. These amendments changed the procedures that EPA must use to evaluate contaminants for possible regulation in drinking water.
- Every 5 years, EPA must create a list of contaminants to be evaluated for possible regulation. These chemicals must have a known health effect, and be suspected of occurring in drinking water. This list is known as the Contaminant Candidate List (CCL).
- Also every five years, EPA must make a regulatory decision on at least 5 contaminants.
- In response to the 1996 amendments, EPA's Office of Ground Water and Drinking Water (OGWDW) published the first Contaminant Candidate List (CCL1) in March 1998. This list contained 50 chemicals and 10 microbes.

### INFORMATION NEEDED TO SUPPORT REGULATORY DECISIONS



### GATHERING NATIONWIDE OCCURRENCE DATA

- EPA will gather nationwide occurrence data through the promulgation of Unregulated Contaminant Monitoring Regulations (UCMR). The first UCMR (UCMR1), was promulgated in 1999.
- Under the UCMR, Public Water Systems are required to monitor for specific chemicals using an approved method, and submit the data to EPA.
- 19 chemicals/chemical groups on CCL1 needed to have analytical methods developed before monitoring could start.
- NERL collaborated with OGWDW's Technical Support Center (TSC) to devise a plan to develop analytical methods for these 19 chemicals/chemical groups, to meet the regulatory timetable (shown below).

### METHOD DEVELOPMENT STRATEGY

- Multi-analyte methods
- Contaminants grouped by chemical similarity

## OCCURRENCE DATA PRIORITIES - CHEMICAL CONTAMINANTS

CHEMICALS/CHEMICAL GROUPS	ORIGIN OF CHEMICAL CONTAMINANTS	METHOD DEVELOPMENT LAB	METHOD #, COMPLETION DATE	UCMR #, MONITORING DATES
2,4,6-trichlorophenol 2,4-dichlorophenol 2,4-dinitrophenol 2-methylphenol	By-products of paper manufacturing  Chemical intermediates for production of herbicides and other synthetic chemicals	NERL	Method 528 - April 2000 (also includes 8 additional phenols of environmental interest)	UCMR1 (2001-2003)
RDX	Military explosive	NERL	Method 529 - Sept. 2002 (also includes 13 additional explosives and munition related compounds of environmental interest)	UCMR2 (2006-2009)
Alachlor-ESA and other acetanilide degradation products		NERL	Method # (to be determined) - Sept. 2003 (proposed) (includes 11 additional acetanilide degradation products in addition to Alachlor-ESA)	UCMR2 (2006-2009)
Diuron Linuron	Herbicides and herbicide degradation products	TSC	Method 532 - June 2000 (also includes 6 additional phenylurea pesticides of environmental interest)	UCMR1 (2001-2003)
Triazine degradation products	Herbicides and herbicide degradation products	TSC	In progress	Projected for UCMR2 (2006 - 2009)
Perchlorate	Solid Rocket Fuel (oxidizer)	TSC NERL	Method 314.0 - Nov. 1999  Method 314.3 (in progress)	UCMR1 (2001-2003)  UCMR2 (2006-2009)
Acetochlor Diazinon 1,2-diphenylhydrazine Disulfoton Fonofos Nitrobenzene Prometon Terbufos	Herbicides/Pesticides  Chemical intermediates in the manufacture of other chemicals	TSC	Method 526 - June 2000 (also includes 3 additional semi-volatile chemicals of environmental interest)	UCMR1 (2001-2003)
Organotins	PVC pipe manufacturing and leaching  Fungicide	NERL	In progress	Projected for UCMR2 (2006 - 2009)

## ANALYTICAL METHOD PROCEDURES FOR NERL METHODS 528 (PHENOLS) AND 529 (RDX)



1. Sample collection and preservation.



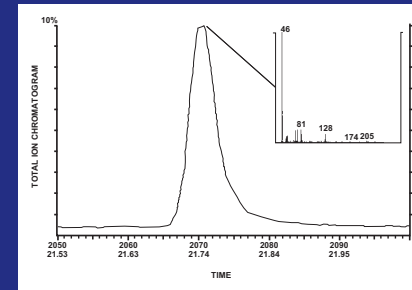
4. Analysis of sample extracts using gas chromatography/mass spectrometry (GC/MS).



2. Sample extraction using solid phase extraction techniques.



3. Extract concentration.



5. Sample data - a chromatogram and mass spectral "fingerprint" of RDX.

## IMPACT

- Safe drinking water is important to every American.
- Over the next decade, regulatory determinations will be made for at least 10 drinking water contaminants.
- Reliable occurrence data, collected through UCMR monitoring using analytical methods developed by NERL and TSC, is critical to the regulatory decision making process.

