Appendix C
State Institutional Framework To Protect Groundwater

C.1 AGENCIES THAT RESPONDED TO THE OTA STATE SURVEY

Alabama Department of Environmental Management

Alaska Department of Environmental Conservation

Arizona Department of Health Services
Arizona Department of Water Resources

Arkansas **Department of Pollution Control and Ecology**

California State Water Resources Control Board
California Department of Health Services
California Department of Water Resources

Colorado Department of Health

Connecticut Department of Environmental Protection

Delaware Department of Natural Resources and Environmental Control

Florida Department of Environmental Regulation

Georgia Department of Natural Resources -- Environmental Protection Division

Hawaii Department of Health
Hawaii Department of Land and Natural Resources
Hawaii Department of Agriculture

Idaho Department of Health and Welfare -- Division of Environment
Idaho Department of Water Resources

Illinois Environmental Protection Agency
Illinois State Water Survey

Indiana State Board of Health -- Division of Water Pollution Control

Iowa Department of Water, Air, and Waste Management

Kansas Bureau of Oil Field and Environmental Geology

Kentucky Natural Resources and Environmental Protection Cabinet
Department of Environmental Protection
Department of Natural Resources
Department for Surface Mining Reclamation and Enforcement
Kentucky Commerce Cabinet
Department of Agriculture
Kentucky Geological Survey
Kentucky Human Resources Cabinet
Department of Health Services
Kentucky Public Protection and Regulation Cabinet
Department of Mines and Minerals

Louisiana.ollis Department of Natural Resources
Louisiana Department of Health and Human Services
Louisiana Department of Transportation and Development -- **Division of Water Resources**
Capital Area Groundwater Commissioner

Maine Department of Environmental Protection

Maryland Department of Health and Mental Hygiene

Massachusetts Department of Environmental Quality and Engineering

Michigan Department of Natural Resources

Minnesota Pollution Control **Agency**

Mississippi Department of Natural Resources
Mississippi State Board of Health
Mississippi Oil and *Gas* Board

Missouri Department of Natural Resources

Montana Department of Health and Environmental Sciences

Nebraska Department of Environmental Control
Nebraska Department of Health

Nevada Department of Conservation and Natural Resources

New Hampshire Water Supply and Pollution Control **Commission**

New Jersey Department of Environmental Protection

New Mexico Health and Environment Department
New Mexico Office of the State Engineer
New Mexico Department of Agriculture

New York Department of Environmental Conservation

North Carolina Department of Natural and Community Resources

North Dakota State Health Department

Ohio Environmental Protection Agency

Oklahoma Department of Pollution Control
Oklahoma Department of Mines
Oklahoma Water Resources Board
Oklahoma State Department of Health
Oklahoma Corporation Commission

Oregon Department of Environmental Quality

Pennsylvania Department of Environmental Resources

Rhode Island Department of Environmental Management

South Carolina Department of Health and Environmental Control
South Carolina Water Resources Commission

South Dakota Division of Water and Natural Resources Management

Tennessee Department of Health and Environment

Texas Department of Water Resources

Utah Department of Environmental Health
Utah Department of Natural Resources and Energy

Vermont Department of Water Resources and Environmental Engineering

Virginia State Water Control Board
Virginia State Department of Health

Washington Department of Ecology

West Virginia Department of Natural Resources

Wisconsin Department of Natural Resources

Wyoming Executive Department

source: **Office of Technology Assessment.**

C.2 OTA STATE SURVEY

Please return the following questionnaire on:

STATE ACTIVITIES ON GROUNDWATER CONTAMINATION

To the: **Office of Technology Assessment**
Groundwater Contamination Project
U.S. Congress
Washington, D.C. 20510

by: August 1, 1983

include: 0 State name: _____

o Name and title of principal contact: _____

_____

o Telephone number of contact: _____

Questions should be directed to: Joan Ham
202-26-2155

STATE ACTIVITIES ON GROUNDWATER CONTAMINATION

Objective: To learn about state efforts to detect, correct and prevent groundwater contamination and to improve state capabilities to deal with this problem.

To learn about state priorities among these four categories.

To learn of the impact of federal programs on state efforts to deal with groundwater contamination.

Introduction: Actions to deal with groundwater contamination include: detection, correction, prevention, and improving capabilities to deal with problems. A major policy issue for the U.S. Congress is to determine how to allocate among these 4 activities, scarce resources that the federal government may expend on groundwater contamination. To provide information to Congress that will help them to allocate federal resources, OTA would like information from the states on their technical knowledge and experience with these four activities and the relative importance the states give to each activity. Federal efforts to address groundwater contamination to date have taken a variety of forms: research, data collection, technical assistance, grants and cost-sharing programs, and regulations. To evaluate options for future federal involvement related to groundwater contamination, information from the states on the value of these past federal efforts is also essential.

Instructions: This questionnaire on state activities related to groundwater contamination is divided into eight sections: Sources, Detection, Corrective Actions, Prevention, Improving Capabilities, State Policies, Federal-State Relations and Impacts. To the extent possible, please answer each of the questions in the space provided. Attach additional sheets, as needed. If you have trouble answering a particular question, please note why you are having difficulty and move on to the next question. A single coordinated response from each state is preferred, however, if this is not possible, please give all appropriate agencies an opportunity to respond directly to OTA. The questionnaire should be returned to OTA no later than AUGUST 1, 1983. Any questions should be directed to Joan Ham (202] 226-2155.

A. **SOURCES OF GROUNDWATER CONTAMINATION**

1. **For each of the sources of groundwater contamination listed below, note whether the state has a program to detect (D), correct (C), prevent (P) and/or learn more about (L) groundwater contamination. Note if the state has no programs (N) for a Particular source.**

a. Landfills
   i. sanitary
   ii. hazardous waste

b. Open dumps

c. Waste piles

d. Surface impoundments

e. Subsurface percolation systems
   (e.g., septic tanks, cesspools)

f. Injection wells

g" Disposal of waste treatment by-product
   (e.g., sludge)

h. Disposal of waste waters
   (e.g., spray irrigation)

i. Agriculture
   i. Irrigation return flow
   ii. Pesticides, herbicides
   iii. Feedlots
   iv. Fertilizers
   v. Runoff

j* Salt-water intrusion brackish water upcoming

k. Spills, accidents

1. Leaks from storage, pipelines, etc.

m. Transportation (e.g., airports, loading docks)

n. Drainage from active/abandoned mines "

0. Infiltrating stormwater, urban runoff

p. Percolation of atmospheric contaminants

q. Aquifer disruption due to construction/excavation

r. De-icing salts

s* Abandoned wells

t. Other (specify)

2* **For each of the sources that the state does not have any programs, as noted in #1, explain why the source is/is not considered to be a problem. Possible reasons for a source not being considered to be a problem include: source does not occur in the state, status of the source is unknown, the source is very uncommon, no groundwater contamination problems have been detected from the source, etc. If the sources without programs are considered to be problems, or there is insufficient information to determine whether or not there is a problem, explain why the state does not have any programs.**

3. Describe any strengths or weaknesses in state programs to deal with different **sources of goundwater contamination.**

4* Name and phone number of contacts to discuss **sources of groundwater contamination:**

B. DETECTION

5. What is the state doing to detect groundwater contamination incidents ? Check the categories that apply to your state.

- o Inventories of potential sources of contamination (note **sources being inventoried)**
- o **Monitoring program for quality assurance at point of use (note water uses being monitored)**
- o **Systematic monitoring of potential sources (note sources being monitored)**
- o **General ambient quality monitoring**
- o **Routine comparison of monitoring data with quality standards**
- o **Responding to complaints of suspected contamination**
- o **No activity**
- o **Other (specify)**

60 What priorities does the state have in detecting contamination? Check the categories that apply to your state, and if possible, rank their importance (1 = highest priority)

o drinking water supplies

public - serving more than 75,000 persons
serving 10,000 - 75,000 persons
serving 25-10,000 persons
serving less than 25 persons
other (specify)

private

o other water supplies

industrial (self-supplied) - process water
- cooling water
- other (specify)

agricultural - livestock watering
- irrigation
- other

o particular sources of contamination (specify)

o particular types of contaminants (specify)

o particular types of contaminants (specify)

o no priorities

o other (specify)

7. Note which of the following techniques for the hydrogeologic investigation of groundwater flow and contaminant behavior **are used by the state: Routinely (R), in** Special **Situations (S), Never (N).** AISO **note which techniques are preferred (P).**

A. Surface Geological
Al. aerial photo
A2. satellite
A3. existing studies
A4. mapping (soils, geology, topography)
A5. other (specify)
A6.

B. Subsurface Geological
B1. test wells
B2. stratigraphy
B3. other (specify)
B4.

C. **Surface Hydrology**
Cl. watershed analysis
C2. climate
C3. other (specify)
C4.

D. Subsurface Hydrology
D1. tracer tests
D2. aquifer tests
D3. modeling -- groundwater flow
D4. modeling -- contaminant transport
D5. other (specify)
D6.

E. Surface Geophysical
El. surface potential
E2. electrical resistivity
E3. electromagnetic (surface penetrating radar)
E4. sniffers
E5. temperature
E6. other (specify)
E7.

F. Subsurface Geophysical
F1. borehole geophysics
F2. other (specify)
F3.

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8. Why does the state prefer to use particular techniques for hydrogeologic analysis ?

90 Describe any technical, legal, and institutional problems the state has in using particular hydrogeologic techniques (e.g., cost, data requirements, technical expertise, safety, manpower, ,accuracy, uncertainty of possible interpretations, manpower, accuracy, uncertainty of possible interpretations, access to site, interference with water rights, etc.).

10. Name, title, and phone number of contacts to discuss advantages, disadvantages and problems of techniques for hydrogeologic analysis.

c. **CORRECTIVE ACTIONS**

11. What is the state doing to correct incidents of groundwater contamination? Check the categories that apply to your state and note the relative frequency of use (High, Moderate, Low, Never).

A. Containment

Al. slurry wall (conventional, continuous trencher, vibrating beam)
A2. grout curtain
A3. sheet piling
A4. surface sealing
A5. diversion ditches
A6. liners
A7. gas Migration control
A8. mathematical modeling-groundwater flow
A9. mathematical modeling-containment transport
A1O. artificial recharge
All. natural containment
A12. other (specify)
A13.

B. In-situ Rehabilitation

B1. plume management (pressure troughs, pressure ridges)
B2. groundwater pumping/water table adjustment
B3. chemical immobilization
B4. bioreclamation
B5. mathematical modeling - groundwater flow
B6. mathematical modeling-contaminant transport
B7. other (specify)
B8.

C. Withdrawal/treatment

cl. withdrawal techniques

C1.io pumping
C1.iio suction
C1.iiio gravity
C1.iv. excavation
Clovo other (specify)
Clovi.

C2. **treatment**

c20i. skimming
c20ii. **filtration**
c20iii. **incineration**
C2.IVO **adsorption (GAC)**
C2*V0 **airstripping**
c2evi. ion exchange
c2.vii. **ultrafiltration**
c2.viii. **reverse osmosis**
c20ix. **other (specify)**

c. **CORRECTIVE ACTIONS (Cont.)**

D. Management Options

D1 . terminate/limit aquifer use
D2 . develop alternative water supply sources
D3 . purchase alternative water supply
D4. treat at point of end-use (e.g., faucet filtering devices)
D5. restore via natural processes (not included under A, B, or C above)
D60 monitoring
D7. health advisories
D80 other (specify)
D9.
D10.

12. Discuss any technical, legal and institutional problems the state has had in the use of any of these techniques (e.g., well closings resulting in more rapid movement or changed direction of contaminant transport, difficulty with obtaining water rights, etc.).

13. Which techniques for corrective action are preferred? *Ifhy?*

14. **Name, title, and phone number of cent acts for discussing advantages, disadvantages, and problems associated with these techniques for correcting groundwater contamination.**

15. How does state decide to address contamination at one site as opposed to another? **Check the categories that** apply to your state, if possible rank their importance.

- o **formal** criteria (specify)
- o **order in which contamination is detected**
- o **public pressure**
- o **sites where a source and responsible party can be identified**
- o **sites qualified for special funding (e.g., Superfund)**
- o **severity of problem (specify how determined)**
- o **other (specify)**

D. PREVENTION

16. What is the state doing to prevent groundwate r contamination from occurring? Check categories that apply to your state. Note whether the category has been implemented (I) or is in the process of being developed (D). If program is in the process of being developed, note whether new legislation (N) is required.

- o permits for discharges to groundwater based on technology requirements
- 0 permits for discharges to groundwater based on performance standards
- 0 voluntary best management practices
- 0 required best management practices
- 0 facility siting requirements
- 0 public education
- 0 classification
- 0 groundwater quality standards other than drinking water standards
- 0 well construction standards
- 0 well closing standards
- 0 non-degradation policy
- 0 policy to protect public health
- 0 policy to balance resource protection with costs of control
- 0 no action
- 0 other (specify)

17. What priorities does the state have for prevention? Check categories that apply to your state, if possible rank their relative importance.

- o protecting certain existing drinking water supplies (specify)
- o **protecting certain aquifers (specify e.g., recharge areas, discharge areas, potential future water supplies)**
- o **eliminating potential for groundwater contamination from particular sources (specify)**
- o no priorities
- o **other (specify)**

18. Name, title, and phone number of contacts to discuss prevention activities:

E. IMPROVING CAPABILITIES

19. What is the state doing to improve its capabilities to deal with groundwater contamination?

- o Special studies (specify)
- o Staff development and training
- o Facility development (specify, e.g., laboratory certification)
- o Public education
- o Agency reorganization
- o Coordination programs (specify)
- o Other (specify)

20. Name, title, and phone number of contacts to discuss improving state capabilities:

F. STATE POLICIES

21• Check the below listed activities for **which the state has formal policies, written guidelines or procedures. Please send a copy, or briefly describe these policies, guidelines or procedures.**

- o **Standard protocols for collecting groundwater quality samples**
- 0 **Standard protocols for analyzing groundwater quality samples**
- 0 **Groundwater monitoring for drinking water supplies (if different than federal Safe Drinking Water Act requirements)**
- 0 **Groundwater monitoring at waste sites (if different than federal RCRA requirements)**
- 0 **Responding to complaints about possible groundwater contamination**
- 0 **Determining what groundwater parameters to measure at a particular locaton**
- 0 **Response when groundwater quality standards are violated**
- 0 **Response when there is no quality standard for a contaminant that is found in groundwater**
- 0 **Setting priorities for correcting groundwater contamination**
- 0 **Establishing the standard to which groundwater contamination will be cleaned up**
- 0 **Confidentiality of certain groundwater information that is collected by the state**
- 0 **Implementing policies for groundwater protection (e.g., classification, non-degradation, discharges to groundwater, etc.)**

22. In the absence of formal policies, written guidelines or procedures for the items listed in #21, how does-the state determine what to do?

23. For which substances has the state established standards for groundwater that are more stringent than federal primary or secondary drinking water standards? What is the technical basis for **these more stringent standards (e.g., SNARL's, minimum detection levels)? Why did the state decide to develop these more stringent standards?**

24. Name, title, and phone number of contacts to discuss implementation of formal policies on groundwater contamination:

25. **Approximately** how much money (i. e., order of magnitude) is the state devoting to each of the following activities related to groundwater contamination:

Detect ion

Correct ion

Prevention

Improving Capabilities

If you are unable to provide an estimate of funds expended on groundwater contamination, please explain why.

26. **What is the relative importance the state gives to each of the 4 categories listed below? (1 = highest) On what basis do you make this ranking?**

Detection

Correction

Prevention

Improve capabilities

27• What do you suspect will be the relative importance of each of the categories listed below in ten years? (1 = highest) On what basis do you make this ranking? If you suspect a change from your answer, explain why.

Detect ion

Correction

Prevent ion

Improve capabilities

28. What are the major changes that the state would like to make in dealing with groundwater contamination?

29. What factors limit the state from making these changes?

300 **Does** the **stat e consider** groundwater to be a problem? If so, what is the nature of the problem and under what circumstances would the state consider the problem to be under control?

31• What types of information on groundwater contamination In other states would be useful to your state?

32. Have you benefitted from other states' information on groundwater contamination? Through what mechanisms?

33. What changes would be required in your state's information management programs to make information listed in your response to #31 available to other states.

G. **FEDERAL-STATE RELATIONS**

34. How could the federal government be of most assistance to the state on groundwater contamination issues? Please be specific about the particular topics or issues where federal resources would be beneficial.

35. **Explain how each of the following federal laws and programs have helped or hindered the states' efforts to address groundwater contamination issues? At a minimum, check the laws and programs the state has used to address groundwater contamination.**

Ae Laws

10 **Environmental Protection Agency**

o **Clean Water Act (CWA)**
Section 104 - [104(a)(5) - water quality surveillance system]
-- Research, Investigation, Training, and Information

Section 106 - Grants for Pollution Control

Section 201 -**Grants for Construction of Treatment Works**

Section 205(j) - Grants for Water Quality Management Planning

Section 208 - Areawide Waste Treatment

Section 303 - Water Quality Standards and Implementation Plans

Section 402 - National Pollutant Discharge Elimination System

- **Safe Drinking Water Act (SDWA)**

  Part B - Public Water Systems (Section 1412 - National Drinking Water Regulations)

  Part C - Protection of Underground Sources of Drinking Water Underground Injection Control Program

  Sole Source Aquifer Program

  Part E - General Provisions
  Section 1442 -- technical assistance to states and municipalities

  Section 1443 -- grants for state programs

- **Resource Conservation and Recovery Act (RCRA)**
  Subtitle C -- Hazardous Waste Management

  Subtitle D -- State or Regional Solid Waste Plans

- o **Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA/Superfund)**
  Section 104(c)(3) -- Cooperative Agreements or Contracts with states for remedial actions

- 0 **Toxic Substances Control Act (TSCA)**

- 0 **Uranium Mill Tailings Radiation Control Act (UMTRCA)**

- 0 **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)**
  Groundwater monitoring studies

  Groundwater modeling -- testing and validation

- o **Other EPA Laws or Programs (specify)**

2. **Department of Commerce**

   - o **Coastal Zone Management Act of 1972**

3. **Department of Interior**

   - o **Surface Mining Control and Reclamation Act of 1977**

4. **Other Laws (specify)**
   - o **Appalachian Regional Development Act of 1975**

0 Water Resources Planning Act of 1965

B. Programs

1. Department of Agriculture

o Soil Conservation Service Programs

o Agricultural Stabilization and Conservation Service Programs

20 Department of Commerce

o Grants for public works

o National Bureau of Standards Reference Materials

3. Department of Interior

o Bureau of Indian Affairs Programs

o Bureau of Land Management Programs

o Bureau of Reclamation Programs

o U.S. Geological Survey Programs
Cooperative programs for Water Resources Investigations

Other USGS programs

- **Water Resources Research Institute Cooperative Programs**

4. **Other (specify)**

H. IMPACTS

360 **What types of economic and environmental impacts of groundwater contaminat ion have been documented in the state? Check the categories that apply, and if possible, quantify.**

A. Economic Impacts

- o **Decreased value of industrial production**
- o **Decreased value of agricultural production**
- o **Avoidance of impaired uses through relocation**
- o **Decreased values for industrial, agricultural, or residential lands**
- o **Damage to materials**
- o **Costs of obtaining alternative water supplies**
- o **Legal/administrative expenses**
- o **Compensation payments**
- o **Other (specify)**

B. Environmental Impacts:

- **Surface water**
- **Land/ soil**
- **Biota**
- **Air**

C.3 SUBSTANCES WITH STATE STANDARDS OR FEDERAL STANDARDS OR GUIDELINES FOR WATER QUALITY THAT MAY BE APPLIED TO GROUNDWATER

Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater Quality States	Groundwater Quality Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories One Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
a. Organic Chemicals											
1. Acenaphthene											0.02[c]
2. Acrylonitrile	NH	0.035/10 day - 0.003/1 mo.	NH	0.035/10 day - 0.003/1 mo.	1						0.000058[d]
3. Alachlor			NY	0.035	1						
4. Aldicarb (Sulfoxide and Sulfone)	CA,NY	0.001-0.007	NY	0.00035	2						
5. Aldrin	CA,IL	Limit of quantification - 0.001	IL,NY,MD,VA	None - 0.001	5						0.000000074[d]
6. Amiben			NY	0.0875	1						
7. Atrazine			NY	0.0075	1						
8. Baygon	CA	0.009			1						
9. Benefin			NY	0.035	1						
10. Benzene	CA,FL,NH,NY	0.0007 - .001 S	NM,NH,NY	None detectable - 0.1;S	4	RMCL[e]		—	0.23	0.07	0.00066[d]
11. α - Benzene hexachloride (α-BHC)	CA	0.0007			1						
12. β - Benzene hexachloride (β-BHC)	CA	0.0003			1						
13. Benzidine			NY	None	1						0.000012[d]

Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater Quality States	Groundwater Quality Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories One Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
A. Organic Chemicals (Continued)											
14. Benzo (a) pyrene			NY	None detectable	1			0.1	0.1	0.025	
15. Bis (2-chloroethyl) ether			NY	0.001	1						0.00003[d]
16. Bromacil (a uracil)			NY	0.0044	1						
17. Bromodichloromethane											0.00019[d,f]
18. Butachlor			NY	0.0035	1						
19. Captan	CA	0.35	NY	0.0175	2						
20. Carbaryl			NY	0.0287	1						
21. Carbofuran		0.015			1			0.100	0.100	0.005	
22. Carbon tetrachloride		0.003 - 0.005; S	MN,NH, NM,NY	0.005 - 0.01; ≤	5			0.2	0.02	—	0.0004[d]
23. Chlordane		0.000055; S	IL,MD NH,NY,VA	None - 0.01; ≤	6			0.063	0.063	0.008	0.00000046[d]
24. Chlorobenzene											0.488[g]
25. Chloroform			MN,NY	0.1 - 0.2	2						0.00019[d]
26. Demiton			MD	0.0001	1						
27. Di (2-ethyl hexyl) phthalate (DEHP)			NY	0.0042	1						15.0[h]

Chemical	STATE STANDARDS[a] Drinking Water States	Range[b] (mg/l)	Groundwater States	Quality Range[b] (mg/l)	Total No. of states	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories one Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
A. Organic Chemicals (Continued)											
28. Di-n-butyl phthalate			NY	0.770	1						34.0[h]
29. Diazinon	CA	0.014	NY	0.0007	2						
30. Dibromochloropropane (DBCP)	CA,NH	0.001; 0.00005/ lifetime	NH	0.00005/lifetime	2						
31. Dibromoethane (EDB)	CA,FL	Limit of quantification -0.03002			1						
32. Dicamba			NY	0.00044	1						
33. Dichlorobenzene (m-)	CA	0.02-0.13			1						0.04[h]
34. Dichlorobenzene (o-)	CA	0.01 -0.13			1						0.40[h]
35. Dichlorobenzene (p-)	CA	0.0003 -0.13	NY	0.0047	2	RMCL[e]					0.40[h]
36. Dichlorodiphenyltrichloroethane (DDT)	IL	0.05	IL,MO,NY VA	None-0.05	4						0.000000024[d]
37. 1,2-Dichloroethane	CA,FL	0.001-0.003	MN,NM	0.02	3	RMCL[e]					0.00094[d]
38. 1,1-Dichloroethylene (Vinylidiene chloride)	NH	1.0/1 day - 0.07/ lifetime	MJ, NH, NM	0.005; 1.0/1 day - 0.07/lifetime	3	m[e]		1.0	0.07	0.07	0.000033[d]
39. 1,2-Dichloroethylene (dand tram)	CA,NH	Limit of quantification; S	NH	s	2			cis: 4.0 trans: 2.7	0.4 0.27	— —	
40. Dichloromethane (Methylene chloride)	CA,NH	0.004;S	NH	s	1			13.0	1.3	0.15	0.00019[d,f]

Chemical	STATE STANDARDS[a] Drinking water States	Drinking water Range[b] (mg/l)	Groundwater Quailty States	Groundwater Quailty Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND -DES (mg/l) National Drinking Water Regulations Primary	Secondary	12A Health Advisories One Day	Ten Day	Long Term (1-2 Yrs)	AmKent Water Quality Criteria for Huron Health
A. Organic Chemicals (Continued)											
41. 2,4-Dichlorophenol											3.09[g]
42. 2,4-Dichlorophenoxyacetic acid (2,4-D)	IL	0.01	NY	0.0044	2	0.1					
43. 1,2-Dichloropropane	CA	0.01			1						
44. Dicyclopentadiene (DCPD)											0.112[i]
45. Dieldrin	CA,IL	Limit of quantification -0.001	IL,MO NY,VA	None - 0.001	5						0.000000071[d]
46. Diethyl phthalate											350.0[g]
47. Diisopropylmethyl phosphonate (DIMP)											0.45[i]
48. Dimethoate	CA	0.14			1						
49. 2,4-Dimethylphenol	CA	0.4			1						0.40[c]
50. 1,4-Dioxane	NH	0.02/10 day	NH	0.02/10 day	1			5.68	0.568	—	
51. Dioxins[j]			MO	None	1						
52. Diphenamide	CA	0.04			1						
53. Diphenyl hydrazine			NY	None detectable	1						0.000042[d]
54. Dithane			NY	0.00175	1						

Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater Quality States	Groundwater Quality Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (all) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories one Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
A. Organic Chemicals (Continued)											
55. Endosulfan			MD	0.000003	1						0.074[h]
56. Endrin			M), NY, VA	None-0.000004	3	0.0002					0.001[h]
57. Ethion	CA	0.035			1						
58. Ethyl Benzene											1.4[h]
59. Ethylene glycol	NH	19.0/1 day	NH	19.0/1 day	1			19.0	5.5	5.5	
60. Ethylene thiourea (ETU)			NY	None detectable	1						
61. Ferbam			NY	0.00418	1						
62. Fluoranthene											0.042[h]
63. Folpet			NY	0.056	1						
64. Formaldehyde								0.030	0.030	—	
65. Gasoline[j]	NH	None	NH	None	1						
66. Guthion			MD, NY	0.00001-0.00044	2						
67. Heptachlor	C&IL	0.00002-0.001	IL, MD, NY, VA	None-0.001	5						0.00000028[d]
68. Heptachlor epoxide	CA, IL	0.0001 - 0.002	VA	0.001	3						
69. Hexachlorobenzene (HCB)			NY	0.00235	1						0.00000072[d]

Chemical	STATE STANDARDS[a] Drinking water States	Drinking water Range[b] (mg/l)	Groundwater Quality States	Groundwater Quality Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories One Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
70. Hexachlorophene			NY	0.007	1						
71. Hexane (n-)								[illegible]	[illegible]		
72. Isopropyl N (3-chlorophenyl) carbamates (CIPC)	CA	0.35			1						
73. Kepone			NY	None detectable	1						
74. Lindane (γ-BHC)			IL,MD, NY,VA	None - 0.001	4	0.004					
75. MBAs (Foaming agents)[j]			MN,NY,VA	0.05 - 0.5	3		0.5				
76. Malathion	CA	0.16	MD,NY	0.0001 - 0.007	3						
77. Maneb			NY	0.00175	1						
78. Methoxychlor			NY,VA	0.00003 - 0.35	2	0.1					
79. 2-Methyl - 4 chlorophenoxy-acetic acid (MCPA)			NY	0.00044	1						
80. Methyl ethyl ketone	NH	1.0/10 day	NH	1.0/10 day	1			7.5	0.75	–	
81. Methyl methocrylate			NY	0.007	1						
82. Methyl parathion	CA	0.03	IL,NY	0.0015 - 0.1	3						

Chemical	STATE STANDARDS[c] Drinking Water States	Range[b] (mg/l)	Groundwater States	Range (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories One Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
A. Organic Chemicals (Continued)											
83. Mirex			[illegible]	None	1						
84. Nitralin			[illegible]		1						
85. Naphthalene											%
86. Oil and Grease[j]			IL,MT,NC VA,WY	Virtually free - 10.0	5						
87. Other hydrocarbons[j]	NH	Prohibited	NH	Prohibited	1						
88. Paraquat			NY	0.00298	1						
89. Parathion	CA	0.03	MD	0.00004	2						
90. Pentachloronitrobenzene (PCNB)	CA	0.0009	NY	None detectable	2						
91. Pentachlorophenol (PCP)	CA	0.03	NY	0.021	2						1.01[g]
92. Petroleum hydrocarbons[j]			VA	1.0	1						
93. Phenols[j]	CA,PA	0.001	IL,MN,NY NC,NM,VA,WY	0.0001-0.100	9						3.5[g]
. Phorate (also Disulfoton)			NY	None detectable	1						
95. Polychlorinated biphenyls (PCBs)[j]	NH,NY	0.0001; 0.001/1 month - 0.0003/lifetime	MD,MN,NH NM,NY,NC	None - 0.001	6			[illegible] 125	0.0125	—	0.00000079[d]

Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater Quality States	Groundwater Quality Range[b] (mg/l)	Total No. of states	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories One Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
A. Organic Chemicals (Continued)											
96. Polynuclear aromatic hydrocarbons (PAHs)[j]	NH	0.025/7 day	NH	0.025/7day	1						0.0000028[d]
97. Propachlor			NY	0.035	1						
98. Propanil			NY	0.007	1						
99. Propazine			NY	0.016	1						
100. Pthalate esters[j]			NC	None detectable	1						individual[l]
101. RDX (Cyclonite)											0.03368[i]
102. Simazine			NY	0.07525	1						
103. Styrene (vinyl benzene)			NY	0.931	1						
104. 1,2,4,5- Tetrachlorobenzene											0.038[h]
105. 2,3,7,8-Tetrachlorodibenzo p-dioxin (TCDD)			NY	0.000000035	1						
106. Tetrachloroethane (1,1,1,2-ad 1,1,2,2)	CA	0.04	MN,NM	0.02	3						0.00017[d](1,1,2,2)
107. Tetrachloroethylene (or perchloroethylene, PCE)	FL,NH	0.003; s	NH,NM	0.0035-0.020	2	RMCL[e]		2.3	0.175	0.020	0.0008[d]
106. Thiram			NY	0.00175	1						

	STATE STANDARDS[a]					FEDERAL STANDARDS AND GUIDELINES (mg/l)				
	Drinking Water		Groundwater Quality			National Drinking Water Regulations		EPA Health Advisories			Ambient Water Quality Criteria for Human Health
	States	Range[b] (mg/l)	States	Range[b] (mg/l)	Total No. of States	Primary	Secondary	One Day	Ten Day	Long Term (1-2 Yrs)	
Organic Chemicals (Continued)											
109. Toluene	CA,NH	0.1-1.0/10 day	NH,NM,MN	15.0; 1.0/10 day	4			2[illegible]	[illegible]	[illegible]	[illegible]
110. Toxaphene			MD,NY	None - none detectable	2	0.005					0.00000071[d]
111. Trichloroethane (1,1,1 and 1,1,2)	CA,FL,NH	0.2-0.3 (1,1,1); S	NH	S	2	RMCL[e] ([illegible]		—	—	[illegible]	18.4[h] (1,1,1) 0.0006[d] (1,1,2)
12. 1,1,2-Trichloroethylene (TCE)	CA,NH	0.005 - 0.075	MN,NH NM,NY	0.0045 - 0.1; S	5	RMCL[e]		2.0	0.2	0.735	0.0027[d]
13. 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T)			NY	0.035	1						
14. 2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP, or Silvex)			NY	0.00026	1	0.01					
115. Trifluralin			NY	0.035	1						
16. Trihalomethanes[j] (TTHMs)						0.10					
[illegible]. Trinitrotoluene (TNT)											0.04424[i]
[illegible]. Trithion	CA	0.007			1						
[illegible]. Vinyl chloride	CA,FL,NY	0.001 - 0.005	[illegible]	[illegible]	[illegible]	[illegible]					0.002[d]
120. Xylenes[j]	CA,NH	0.62; S			1			12.0	1.4	0.62	

Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater Quality States	Groundwater Quality Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories One Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
A. Organic Chemicals (Continued)											
121. Zineb			NY	0.00175	1						
122. Ziram			NY	0.00418	1						
B. norganic Chemicals											
123. Aluminum			MN,NM,WY	[illegible]	3						
124. Ammonia			WY	0.02-0.5	1						
125. Ammonia nitrogen			VA	0.025	1						
126. Arsenic	PA	0.01	MN,NM,NY	0.01-0.1	4	0.05					0.0000022[d]
127. Barium			NM,NY	1.0	2	1.0					
128. Beryllium			WY	0.011-1.1	1						0.0000037[d]
129. Boron			AK,IL,MN NM,WY	0.3-5.0	5						
130. Cadmium			IL,NM,NY,VA,WY	0.0004-1.0	5	0.010					0.010[h]
131. Chlorides[j]			MN,NM,NY,VA,WY	25-250	5		250				
132. Chlorine			AK,MO	Not specified-0.01	2						
133. Chromium			NM,NY	0.05	2	0.05					0.050[h] (hexavalent) 170.0[h] (trivalent)

Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater States	Groundwater Limits	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories One Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Human Health
B. Inorganic Chemicals (Continued)											
134. Cobalt			MO,MN,NM,WY	0.05-1.0							
135. Copper	IL	5.0	IL,MO,NY,NM,NM,WY	0.01-1.0							
136. Cyanides[j]	IL,PA	0.01 - 0.2	MO,NM,NY,VA IL,MN,WY	0.005-0.025							
[illegible]. Fluorides[j]	IL,KY,MO,NH PA,TN,WI	1.0 - 2.2	IL,NM,NY,VA	1.4-1.6	10	1.4 - 2.4					
138. Heavy [illegible]			AK	Not specified	1						
139. Iron	IL	.0	NM,NY,VA	0.01-10	4		[illegible]				
140. Lead			NM,NY	0.025-0.05	2	0.05					0.050[h]
141. Lithium			VA,WY	2.5	2						
142. Manganese	[illegible]	0.15	NM,NY,VA	0.01-0.5	4		[illegible]				
143. Mercury			IL,NM,NY,VA	0.00005-0.002	4	0.002					0.000144[h]
144. Molybdenum			[illegible]	[illegible]	2						
145. Nickel			IL,MN,NM VA,WY	0.05-1.0	5						0.0134[h]
146. Nitrates[j]			NJ,NM,NY	Not specified-10.0	3	10.0 (as N)					
147. Nitrites[j]			NC,VA,WY	0.025-10.0	3						

Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater Quality states	Groundwater Quality Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (all) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories one Day	Ten Day	Long Term (1-2 Yrs)	Ambient Water Quality Criteria for Huron Health
B. Inorganic Chemicals (Continued)											
148. $(NO_3 + NO_2)$-N[j]			VA,WY	0.5+00	2						
149. Phosphates[j]			NJ	Not specified							
150. Selenium			NM,NY	0.02-0.05	2	0.01					0.010[h]
151. Silver			IL,NM,NY	0.005-0.05	3	0.05					0.050[h]
152. Sodium	AK,FL,ME	20-250	VA	25-1oo	4						
153. Sulfates[j]			MN,NM,NY,VA,WY	1&600	5		250				
154. Vanadium			VA,WY	0.1	2						
155. zinc			MO,NM,NY,VA,WY	0.05-25	5		5.0				5.0[c]
C. Biological Substances											
156. Coliform bacteria	WI	None	MO	200	2	1/100 ml					
D. Radionucleides											
157. Beta particle and photon radioactivity						4 mrem					
158. Gross alpha particle activity[j]						15 pCi/l					
159. Grins beta[j]	PA	1000 pCi/l	IN, IL,MT,VA	50-1000 pCi/l	5						

Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater Quality States	Groundwater Quality Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulatiers Primary	Secondary	EPA Health Advisories One Day	Ten Day (1-2 Yrs)	Long Term	Ambient Water Quality Criteria for Human Health
D. Radionucleides (Continued)											
160. Radium 226	PA,WI	None -3.0	IN, IL,VA	1.0-3.0	5						
161. Radium 226 and 228, combined[j]			NM	30 pCi/l	1	5.0 pCi/l					
IQ. Radon 222	PA	10									
163. Strontium 90			IN, IL,VA,WY	2.0-10.0	4						
164. Tritium	AK,MT	20,000 pCi/l									
165. Uranium			NM,WY,VA	0.035.0	3			—	— 10.U pCi/l		
E. Other Measures											
166. Alkalinity[j]			VA	10-500							
167. ABS (alkyl b'mile sulfonate)[j]			PA	0.5							
168. CCE (Carbon chloroform extract)[j]			PA	0.2							
169. COD (Chemical oxygen demand)[j]			MO	10.0							
170. DO (Dissolved oxygen)[j]			MN ,MO	1 .0-6.0							
171. HCO^3 (Bicarbonate)			MN	5.0 meq/l							
172. Residual carbonate			AK	1.25							
173. RSC (Residual sodium carbonate)			WY	1.25 meq/l							

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Chemical	STATE STANDARDS[a] Drinking Water States	Drinking Water Range[b] (mg/l)	Groundwater Quality States	Groundwater Quality Range[b] (mg/l)	Total No. of States	FEDERAL STANDARDS AND GUIDELINES (mg/l) National Drinking Water Regulations Primary	Secondary	EPA Health Advisories One Day	Ten Day (l-2 Yrs) Long Term	Ambient Water Quality Criteria for Human Health
E. Other Measures (Continued)										
174. SAR (Sodium absorption ratio)[j]			WY	8.0	1					
175. Specific conductance[j]			MN,MT	<1000 - >15,000	2					
176. TDS (Total dissolved solids)[j]			MN,NJ,NM,VA	2SO-1000	3		*500.0*			
177. Taal hardness[j]			MN,MO,VA	none-300	3					
178. Turbidity[j]	TN,VA	0.>2.0/2 day			2	1-5 TU				

a. State standards are listed only if they are more stringent or cover additional substances than standards established by the Federal Safe Drinking Water Act.

Sources of information on State standards are (API, 1983) and the OTA State survey. All Federal standards were established by EPA unless otherwise indicated.

b. All standards are in milligrams per liter (mg/l, equivalent to parts per million) unless otherwise indicated. Other units used include mrem (millirem), pCi/l (picocuries per liter), meq/l (milliequivalents per liter), and TU (turbidity units).

The entries in the range column are of three types.

1) Some entries provide information on the lowest and highest concentrations that the States use as standards. Where all States apply the same standard for a substance, a single value is given. Note that the entries do not distinguish among the different circumstances under which a standard might be applied (e.g., different standards may be applied to different classifications of groundwater).

2) Some entries, such as Federal health advisories (SNARLs), are time-dependent and are expressed in terms of concentration per unit time. "S" represents a State standard that is the same as the SNARL.

3) "Not specified" indicates that a State has a standard but the value was not contained in the information sources.

c. Ambient water quality criteria for human health are theoretically derived based on organoleptic effects (i.e., unpleasant taste and odor; see also footnote g), carcinogenicity (see footnote d), or toxicity (i.e., adverse effects other than cancers, see footnotes g and h). In this case, the value indicated is based on controlling unpleasant taste or odor either of water consumed directly or of water consumed indirectly via aquatic organisms found in ambient waters. Note that there is no demonstrated relationship between unpleasant taste or odor and adverse health effects.

d. The value indicated is based on an increased risk of one additional cancer in one million people exposed (10^{-6} risk level) through ingestion of contaminated water and contaminated aquatic organisms. The water quality criteria document values for 10^{-5} and 10^{-7} risk levels are generally ten times higher and lower than the 10^{-6} risk level, respectively.

According to the EPA Notice of Water Quality Criteria Documents (45 FR 79318, Nov. [illegible], 1980), for the maximum protection of human health from potential carcinogenic effects due to exposure to this chemical through ingestion of contaminated water and contaminated aquatic organisms, the ambient water concentration should be zero (assuming that the chemical's behavior is consistent with the non-threshold concept for carcinogens, see app. H.1). The notice further states that:

- zero concentration may not be attainable at the present time.
- concentrations are thus estimated that may result in an incremental increase of cancer over a lifetime at the 10^{-5}, 10^{-6}, and 10^{-7} risk levels; and

- o the estimated risk range is presented for information purposes and does not represent an EPA judgment on an "acceptable" risk level.

e. Recommended Maximum Contaminant Levels (RMCLs) were proposed on June 12, 1984 (49 FR 24330). Proposed values would result in no known or anticipated adverse health effects with an adequate margin of safety and serve as non-enforceable health goals for public water systems.

f. The value indicated is for the category halomethanes, not for the individual chemical.

g. Different criteria are available for both toxicity and organoleptic effects from ingestion of contaminated water and contaminated aquatic organisms. The value indicated is derived from available toxicity data for the protection of public health. Criteria based on taste and odor data are more stringent than the toxicity level; however, there is no demonstrated relationship between unpleasant tastes and odors and adverse health effects.

h. The criterion indicated is for the protection of human health from the toxic properties (i.e., all adverse effects other than cancers) of the substance through ingestion of contaminated water and contaminated aquatic organisms.

i. Criteria levels shown were established by the Army Medical Bioengineering Research and Development Laboratory.

j. Standard is for a group of chemicals or an indicator of water quality, not a single chemical.

k. "Not available" indicates that a criterion for human health has not been published due to the insufficiency of available data. However, criteria are available for aquatic life.

l. A level is not established for the protection of human health from total phthalate esters. Levels to protect human health from toxic properties of the following individual phthalate esters have been set for ingestion of water and contaminated aquatic organisms:

dimethylphthalate -- 313.0 mg/l
diethylphthalate -- 350.0 mg/l
dibutyl-phthalate -- 34.0 mg/l
di-2-ethylhexyl-phthalate -- 15.0 mg/l

Source: Office of Technology Assessment.

C.4 OTA STATE SURVEY RESPONSES: EXAMPLES OF STRENGTHS, PROBLEMS, AND DESIRED FEDERAL ASSISTANCE FOR EACH STATE

Appendix C.4 documents information summarized in State Strengths and Problems in Programs to Deal With Groundwater Contamination and Desired Federal Assistance, chapter 4. The States' responses to open-ended survey questions about groundwater program strengths and problems, and desired Federal assistance on groundwater protection are listed. The caveats for interpreting survey results, described in OTA State Survey, chapter 4, apply to this appendix; in particular, 1) information in this appendix reflects the views of the State personnel involved in groundwater quality programs who responded to the survey and 2) the fact that only a few States raised a particular issue does not necessarily imply that the issue is not of concern to other States.

	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
ALABAMA			
Sources			
Improve Capabilities		- Insufficient staff expertise - Insufficient resources for enforcement	
Standards		- Lack of groundwater quality standards	
Detection		- Difficulty obtaining cooperation and coordination of efforts to isolate source of contamination when there are several possible sources	
Correction		- Insufficient authority to stop use of contaminated private wells - Difficulty testing buried tanks for leaks after detection of gasoline contamination - Lack of State cleanup fund	
Prevention			

	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
ALASKA			
Sources	- Existence of State permit programs for wastewater discharges, landfills, and solid waste disposal sites		
Improve Capabilities		- Insufficient funding - Insufficient enforcement of State permit program requirements	- Provide funding for enforcement activities - Provide technical assistance for obtaining public support for cleanup efforts
Standards			
Detection			- Provide technical assistance for analyzing hydrogeology and identifying dangerous levels of contamination
Correction			- Provide technical assistance for implementing cleanup technologies, informing public, and developing substitute water supplies
Prevention		- Insufficient programs to regulate hazardous wastes from cradle to grave	

	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
ARIZONA			
Sources			
Improve Capabilities	- Groundwater permit program under development - State legislative support - Integrated program to regulate groundwater quantity and quality for portions of the State and to protect beneficial uses	- Difficulties with Federal programs including Federal-State coordination - Insufficient research and development activities	- Facilitate information transfer - Improve Federal programs related to establishing quality standards, resolving Indian water rights problems, and coordinating Federal groundwater programs
Standards	- State narrative standards for groundwater quality	- Lack of standards for volatile organics - Difficulties with conducting risk assessments	- Accelerate research and development on criteria to support standards and develop toxicological information for volatile organics and risk assessment
Detection		- Insufficient data - Insufficient technical support for laboratory facilities	- Provide funding for data collection - Provide technical assistance for laboratory analysis
Correction			
Prevention			
ARKANSAS			
Sources	- Strong programs for hazardous wastes and contamination problems associated with oil wells		
Improve Capabilities		- Insufficient staff expertise - Insufficient resources for enforcement - Insufficient State legislative support - Insufficient funding - Lack of groundwater strategy	- Train State staff - Establish policy to protect interstate aquifers
Standards			
Detection		- Insufficient enforcement	- Provide funding for [illegible] collection
Correction			- Provide funding for correction of existing contamination
Prevention			

	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
CALIFORNIA			
Sources	- Authority to address most sources of contamination	- Insufficient programs and authority to regulate underground storage of non-waste materials	
Improve Capabilities		- Insufficient authority to enforce health advisories - Difficulties with coordination among State agencies	
Standards			- Accelerate research and development on standards for toxics
Detection	- Experienced staff for isolating potential sources of contaminat	- Need to improve coordination - Insufficient monitoring - Insufficient data management - Insufficient funding - Insufficient training opportunities	- Provide funding for data collection
Correction	- State program to provide cleanup funds	- Insufficient authority under State water rights doctrine to manage groundwater resources	- Provide additional funding for cleanup under CERCLA - Accelerate research and development on inexpensive treatment techniques
Prevention			- Accelerate research and development on technologies to control more contaminants

COLORADO	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Insufficient program regulations and statutory limitations regarding septic tanks, liquid waste disposal, and inactive/abandoned waste disposal sites	
Improve Capabilities	- On-going effort to evaluate need for program changes	- Industrial opposition to groundwater protection efforts - Insufficient resources for studying problems - Insufficient program regulations and statutory limitations regarding drinking water standards	- Provide funding for development and implementation of State programs - Provide technical assistance
Standards		- Difficulties with Federal criteria for uranium	- Establish Federal drinking water standards for organic chemicals
Detection	- Program under development	- Insufficient funding - Insufficient staff expertise	
Correction			
Prevention			

CONNECTICUT	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Authority to control most sources of groundwater contamination		
Improve Capabilities		- Insufficient research and development activities	- Provide funding for State research and special studies - Provide technical assistance and training on dealing with groundwater problems
Standards	- Water quality standards and classification system	- Inadequate risk assessment of exposure to pollutants	- Establish additional standards for water quality
Detection		- Insufficient funding - Insufficient staff expertise - Insufficient investigation of aquifer characteristics	- Provide funding for data collection
Correction			
Prevention			

DELAWARE	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabi ities		= Insufficient staff expertise Difficulty attracting and retaining qualified staff - Difficulty gaining cooperation of local governments - Insufficient information for risk assessment	- Provide funding for development and implementation of State programs - Facilitate information transfer on available technology
Standards		- Insufficient toxicology and risk information	- Accelerate research and development on toxicological information and risk assessment
Detection	- Effective mechanisms for coordination of involved agencies	- Technical difficulties in determining relationship between concentrations of contaminants at points of use and sources	Accelerate research and development on monitoring
Correction		- Inability to handle sufficient numbers of incidents	
Prevention		- Questionable reliability of existing programs for prevention	

FLORIDA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Strong regulatory authority over sources		
mprove Capabilities		- Insufficient staff to implement regulations - Insufficient funding	- Provide technical assistance staff training
Standards		- Lack of implementable standards	- Accelerate research and development on standards for toxics
Detection		- Insufficient monitoring related to sources, ambient quality, and aquifer characteristics - Insufficient materials an instruments for detection activities	- Provide for data collection
Correction		- Inability to handle sufficient numbers of incidents - Inadequate technology for karst environments	- Train State staff on technologies for cleanup
Prevention		- Lack of classification system	

GEORGIA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities	- Groundwater management plan development	- Problems with slow EPA bureaucracy - Lack of Federal delegation of UIC Program to State	- Provide technical assistance
Standards			
Detection	- Effective coordination - Monitoring program under development		
Correction	- Authority to correct most potential point sources of contamination		
Prevention			

HAWAII	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		- Insufficient staff - Insufficient funding - Insufficient program coordination	- Facilitate information transfer on toxic substances
Standards		- Insufficient toxicology and risk information	
Detection	- Strong program for monitoring public water supplies	- Insufficient monitoring related to sources and contaminants	
Correction			
Prevention			

IDAHO	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Insufficient regulations and/or guidelines for surface impoundments, mining activities, hazardous waste disposal, subsurface sewage disposal, and solid waste disposal	
Improve Capabilities		- Insufficient guaranteed long-term funding - Insufficient staff - Insufficient program coordination - Lack of information/education program	- Improve Federal regulations to be more responsive to specific needs of States
Standards		- Lack of groundwater quality standards	
Detection		- Insufficient funds and expertise for geophysical evaluations	- Provide funding for data collection
Correction			- Provide funding for dealing with widespread problems - Provide technical assistance on implementing cleanup actions
Prevention			- Provide funding for implementing federally mandated programs

ILLINOIS	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Lack of regulations for siting or monitoring industrial product storage, production facilities, and pipelines	
Improve capabilities		- Insufficient funding - Insufficient resources - Lack of groundwater strategy - Insufficient program coordination - Insufficient emphasis on protection	- Provide funding for development and implementation of State programs - Provide technical assistance - Accelerate research and development - Facilitate information transfer
Standards		- Lack of groundwater quality standards	
Detection	- [illegible] staff capabilities	- Insufficient data - Insufficient facilities - Insufficient authority over water rights and site access - Technical uncertainties associated with data interpretation	
Correction			
Prevention		- Inability to establish sufficient [illegible] controls to protect groundwater - Lack of classification system	

INDIANA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		- Insufficient funding - Insufficient staff expertise - Insufficient laboratory analytical capability	
Standards			- Accelerate research and development on toxicology and risk assessment
Detection		- Insufficient resources to identify and verify sources of contamination - Insufficient monitoring of sources and groundwater supplies - Inadequate response time for checking private wells for contamination	- Provide funding for data collection - Provide technical assistance for analyzing hydrogeology
Correction		- Insufficient information on groundwater use	- Provide technical assistance for implementing cleanup alternatives
Prevention			

OWA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Good program to regulate landfills and wastewater treatment facilities	- Insufficient programs to control non-point sources of contamination	
Improve Capabilities		- Insufficient resources - Insufficient data	
Standards			- Accelerate research and development on criteria to support State groundwater standards
Detection		- Difficulties obtaining [illegible] in some cases - Insufficient monitoring of sources	
Correction			- Accelerate research and development on technology for corrective action
Prevention			- Accelerate research and development on control technologies and management practices

KANSAS	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities	- [illegible] capabilities	- Insufficient funding - Difficulty retaining qualified staff - Difficulty obtaining public support	- Modify RCRA to establish more practical approach to delisting, defining hazardous wastes, and approval procedures for State primacy
Standards			- Increase research and development on standards for Priority Pollutants
Detection	- Strong staff capabilities	- Insufficient resources	
Correction		- [illegible] with CERCLA	- Simplify CERCLA procedures to allow States to use funding more readily
Prevention			

KENTUCKY	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
ources		- Insufficient programs for handling agricultural wastes, household wastes, and some on-site sewage disposal, and for aquifer protection	
Improve Capabil⁺ es		- Insufficient funding - Insufficient staff expertise - Insufficient enforcement (over-rel: ⁻ e on self-monitoring) - Lack of groundwater strategy - Insufficient priority for groundwat relative to surface water - Insufficient legislative, public, and industrial support	- Provide funding for staff training, special studies, and development and implementation of State programs - Provide technical assistance - Accelerate research and devel on demonstration projects - Establish reasonable national groundwater protection policy - Clarify Federal program requirements and resolve inconsistencies among programs
Standards		- Lack of groundwater quality standards	- Accelerate research and deve opment on standards for toxics
Detection		- Insufficient staff expe ise and equipment to characterize aquifer - Insufficient data - Insufficient authority for groundwater under some programs - Insufficient funding	
Correction			- Accelerate research and development on cleanup of on-site waste disposal problems
Prevent: o			- Accelerate research and development on preventing contamination from on-site waste disposal

LOUISIANA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities	- Program coordination	- Difficulty attracting and retaining staff with sufficient expertise - Insufficient flexibility in Federal regulations to negotiate with industry	- Provide funding for implementation of cooperative programs - Provide technical assistance on geochemistry, toxicology, and statistical analysis
Standards			
Detection			
Correction			
Prevention			

MAINE	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Difficulty addressing widespread sources such as agricultural contaminants and gasoline tank leaks	
Improve Capabilities		- Insufficient staff - Insufficient funding	
Standards			- Establish additional Federal drinking water standards
Detection		Insufficient data on aquifer characteristics and contamination sources	- Provide funding for data collection
Correction		Lack of funding and authorization to undertake emergency remedial action	
Prevention			

MARYLAND	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Programs to deal with different sources of contamination		
Improve Capabilities		- Insufficient funding - Difficulty attracting experienced staff	- Provide technical assistance
Standards			
Detection		- Insufficient capabilities to install wells (e.g., lack of equipment) - Technical difficulties - Difficulty obtaining site access	
Correction			
Prevention			

MASSACHUSETTS	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		- Insufficient funding	- Accelerate research and development on groundwater movement and treatment
Standards			
Detection			
Correction			
Prevention			

MICHIGAN	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		- Insufficient funding	
Standards		- Lack of standards to limit discharges to groundwater	
Detection		- Insufficient monitoring - Insufficient resources - Difficulties with modeling (e.g., high costs and validation)	- Provide funding for investigations at hazardous waste sites
Correction	- State program for cleanups and setting priorities for cleanup action	- Insufficient funds for cleanup	- Provide technical assistance for public information and public relations on cleanup activities - Support administration of CERCLA program
Prevention		- Lack of non-regulatory approaches to prevention such as environmental impairment liability insurance	

MINNESOTA	EXAMPLES OF STRENCTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Strong programs related to spill reporting and cleanup, acid rain deposition, water well construction, and water well abandonment		
Improve Capabilities		- Insufficient funding - Insufficient staff - Insufficient public understanding	- Establish national program to assist States in program development and implementation
Standards			
Detect Ion		- Technical difficulties demonstrating that a contamination problem is related to a specific source	
Correct ion			- Provide funding for dealing with non-hazardous waste problems
Prevent ion			

MISSISSIPPI	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities			Train State staff
Standards			
Detection	Monitoring related to regulatory requirement	- Insufficient data on aquifer characteristics	Provide funding for data collection
Correction			Provide funding for correction of existing contamination Provide an information clearinghouse on cleanup activities
Prevention			

	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Difficulty controlling agricu tural use of chemica ⁼	
Improve Capabilities		⁼ ⁼nsuffici⁼⁼ resources for enforcement	⁼ Provide funding for hiring of additional trained staff ⁼ Train State staff ⁼ Strengthen Federal regulations
Standards			
Detection		⁼ ⁼nsufficient monitoring requirements ⁼ ⁼nsufficient staff and staff training ⁼ ⁼nsufficient data to describe groundwater flow in karst environments	⁼ Provide funding ⁼ data ⁼ and special studies
Correction			- Accelerate research and development on technologies
Prevention		- Insufficient well drilling standards and enforcement	⁼ Provide funding for development of better controls on sources of contamination - Develop controls on contaminant generation, handling, and destruction

MONTANA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Insufficient programs for agricultural sources, pipelines, and fuel storage tanks	
Improve Capabilities	- Enhanced enforceability of program due to recent development of groundwater permit regulations and quality standards	- Insufficient funding - Insufficient public support	- Provide technical assistance
Standards			
Detection		- Insufficient monitoring related to aquifer characteristic - Insufficient funding - Insufficient authority - Insufficient technical expertise	
Correction		- Insufficient response to complaints	
Prevention		- Insufficient review of projected impacts of development activities on groundwater quality	

NEBRASKA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Insufficient programs for agricultural non-point sources	
Improve Capabilities	+ Existence of comprehensive enabling legislation + Broad range of staff expertise	= Insufficient funding Overlap of agencies' programs and responsibilities - Insufficient research	- Improve funding for CWA, RCRA, and SDWA programs + Provide technical assistance + Accelerate research and development + Facilitate information transfer + Remove Federal incentives that lead to contamination - Allow greater State flexibility in Federal program implementation
Standards			
Detection	+ Program coordination under RCRA, UIC, and CWA - Well-equipped laboratory facilities	+ Insufficient data base + Insufficient staff for laboratory and investigative activities - Insufficient authority over quality/ quantity issues	
Correction		- Insufficient staff for corrective action activities	- Provide technical assistance for implementing cleanup actions
Prevention		+ Inability to restrict inappropriate activities in sensitive areas + Lack of properly located and constructed hazardous waste disposal facilities	

NEVADA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Authority to address any source of groundwater contamination		
Improve Capabilities		- Insufficient staff experience - Insufficient funding	
Standards			- Provide technical assistance on the development and implementation of standards for toxics
Detection			- Provide technical assistance for monitoring and laboratory analysis
Correction			
Prevention			

NEW HAMPSHIRE	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Capabilities	- Comprehensive groundwater permit program		- Provide funding for development and implementation of State programs - Provide technical assistance
Standards			
Detection		- Insufficient resources - Insufficient monitoring of sources, especially those associated with industrial waste discharges	- Provide funding for monitoring and laboratory analysis
Correction			
Prevention		- Lack of suitable hazardous waste disposal facilities - Insufficient enforcement of transportation requirements for hazardous wastes	- Provide funding for sole source aquifer protection

NEW JERSEY	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Authority to deal with all types of contamination	- Insufficient programs for storage tanks	
Improve Capabilities		- Insufficient funding	- Provide funding for data collection on hydrogeology for planning and prevention purposes
Standards			- Accelerate research and development on standards for toxics
Detection	- Well-equipped investigation program	- Insufficient authority - Insufficient monitoring related to sources - Difficulty obtaining qualified staff	- Accelerate research and development on groundwater sampling procedures
Correction		- Inability to handle sufficient numbers of incidents	- Train State staff especially on safety
Prevention			

NEW MEXICO	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Existence of comprehensive regulations to protect groundwater quality from a wide variety of sources - Strong programs for new or newly modified sources	- Insufficient programs related to irrigation practices, sanitary landfills, dumps, hydrocarbon fuel facilities, and septic tanks	
Improve Capabilities	- Program coordination	- Insufficient funding - Insufficient staff - Insufficient programs for information and education - Insufficient public support - Insufficient coordination of selected programs (e.g., for hazardous wastes and groundwater protection) - Insufficient data management	- Provide funding for State program expansion - Provide technical assistance - Expand existing data management programs
Standards		- Insufficient number of numeric standards	
Detection		- Insufficient funding - Insufficient laboratory capabilities	- Provide technical assistance on monitoring and laboratory analysis
Correction		- Difficulty dealing with newly recognized problems (e.g., hydrocarbon fuels) - Difficulty obtaining water rights	- Improve response time under CERCLA
Prevention			

NEW YORK	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
		– Insufficient regulatory control of toxic and hazardous chemical storage and handling at industrial and commercial sites	
Improve Capabilities		– Insufficient regulatory program priorities for protecting critical aquifers – Insufficient funding – Inadequate goals for groundwater protection – State statutory weaknesses – Insufficient legislative support – Insufficient enforcement	– Provide funding for development and implementation of State programs
Standards		– Insufficient toxicology and risk information – Insufficient action on health effects data – Insufficient standards for synthetic organics	– Accelerate research and development on standards for toxics – Establish additional Federal drinking water standards
Detection		– Lack of access to specialized equipment	– Provide funding for data collection – Accelerate research and development on fate of chemicals in groundwater – Accelerate research and development on relationships between land use and groundwater quality
Correction			– Accelerate research and development on aquifer renovation and reclamation procedures
Prevention			– Accelerate research and development on identifying substances that should never be released intentionally into the groundwater system

NORTH CAROLINA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Difficulties dealing with wastewater, sludge, landfills, leaks from storage, and agriculture	
Improve Capabilities		- Insufficient funding - Insufficient manpower - Insufficient groundwater strategy implementation	- Provide funding for development and implementation of State programs - Establish comprehensive groundwater policy - Provide technical assistance on data management
Standards			
Detection			- Accelerate research and development on monitoring
Correction			
Prevention			- Accelerate research and development on facility design alternatives to prevent contamination - Accelerate research and development on alternatives to land disposal

NORTH DAKOTA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Adequate authority under State water pollution law for action if any activities contaminate groundwater		
Improve Capabilities		- Insufficient funding - Insufficient staff expertise - Lack of groundwater strategy	- Provide funding for development and implementation of State programs
Standards			
Detection			- Provide technical assistance for hydrologic analysis
Correction			- Provide technical assistance for implementing cleanup actions
Prevention			

OHIO	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
ources	- Strong programs for landfills, injection wells, and subsurface percolation	- Insufficient programs for non-hazardous surface impoundments	
Improve Capabi. i=ɔ=		- Insufficient staff expertise - Insufficient funding - Lack of groundwater strategy - Insufficient resources for enforcement - Insufficient program coordination	- Provide funding for development of State programs - Provide technical assistance
Standards			
Detection		- Insufficient staff to review all s:=.. - Insufficient monitoring	
Correct		- Insufficient coordination in evaluation and cleanup of problems - Inability to handle sufficient numbers o= incidents	
Prevention			

OKLAHOMA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Strong UIC Program - New State funding program for corrective action for abandoned wells likely to purge	- Insufficient programs for some sources including urban runoff and construction	
Improve Capabilities	Increased coordination	- Insufficient resources - Insufficient coordinating strategy and use of common criteria - Insufficient funding for monitoring, enforcement, education, and special studies - Insufficient staff expertise	- Continue funding for implementation of UIC Program - Provide technical assistance - Establish program for interstate coordination of large groundwater basins
Standards		- Lack of aquifer-specific water quality standards	
Detection	- Interagency coordination	- Insufficient data - Insufficient equipment and testing facilities - Difficulty attracting and retaining qualified staff	- Provide funding for detection and monitoring program
Correction			- Provide funding for dealing with widespread problems - Accelerate research and development on oil field waste cleanup
Prevention		Insufficient promotion of prevention of groundwater contamination	- Provide funding for implementing Best Management Practices - Provide an information clearinghouse for State rules and regulations to prevent contamination

OREGON	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Strong program for on-site waste disposal		
Improve Capabilities	- Strong policy for groundwater protection	Insufficient funding	- Establish coordinated national policy for groundwater protection - Facilitate information transfer
Standards		- Lack of groundwater quality standards	- Accelerate research and development on toxicology and impacts of organic contaminants
Detection		- Insufficient funding - Insufficient staff resources	- Provide funding for data collection
Correction			
Prevention			

PENNSYLVANIA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		- Insufficient funding and resources for enforcement activities	- Provide funding for State program development - Train State staff - Improve coordination of Federal activities related to groundwater quality and quantity
Standards		- Lack of groundwater quality standards	
Detection	- Effective mechanism for coordination of State programs	- Inadequate funding and other resources	
Correction			
Prevention			

RHODE ISLAND	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		- Insufficient staff expertise - Difficulties with program coordination	- Provide funding for development of State programs - Train State staff
Standards			- Accelerate research and development on groundwater standards
Detection	- Monitoring program - Good laboratory analysis capabilities	- Difficulties with coordination - Insufficient funding - Insufficient staff	
Correction		- Insufficient authority for problems that do not qualify under CERCLA or RCRA - Difficulties with coordination among State, Federal, and interstate agencies on selecting remedial approaches - Insufficient funding to deal with contamination from non-hazardous wastes	
Prevention			

SOUTH CAROLINA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		- Inadequate policy for groundwater protection	- Establish Federal policy for groundwater protection
Standards			
Detection		- Insufficient monitoring of potential sources of contamination - Insufficient data	- Provide funding for data collection
Correction		- Lack of State program to provide funds for cleanup activities	- Accelerate research and development on less costly techniques for cleanup and monitoring - Establish national groundwater policy for correction and prevention - Establish cleanup criteria
Prevention			

SOUTH DAKOTA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		- Insufficient funding - Insufficient staff expertise	- Provide technical and/or financial assistance for development and implementation of State programs
Standards		- Lack of groundwater quality standards	- Provide technical assistance for establishing and implementing standards
Detection		- Insufficient funding to detect and study most sources of contamination	
Correction		- Insufficient funding to correct point sources of contamination	- Provide funding for correcting existing contamination
Prevention			

TENNESSEE	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
[illegible]	- Adequate authority for [illegible]	- Insufficient programs for septic tanks	
Improve Capabilities		- Inadequate enforcement	
Standards			
Detection	- Strong staff capabilities	- Inadequate investigative [illegible]echniques	
Correction		- Lack of funds for State to take [illegible] - Potential for State liability [illegible] third-party damage suits	
Prevent[illegible]		- Insufficient resources to conduct hydrogeologic investigations for s[illegible]ting non-hazardous waste activities	

TEXAS	EXAMPLES OF STRENGTHS	EXAMPLES [illegible] PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Strong programs for RCRA facilities and underground injection control except for Class II wells		
Improve Capabilities	- Strong legislative support for groundwater protection	- Insufficient funding - Insufficient staff expertise - Difficulties obtaining site access and water [illegible]ights	- Continue funding of RCRA - Facilitate information transfer - Improve functioning of RCRA and UIC Program
Standards			
Detection	- Strong staff capabilities	Insufficient monitoring relat[illegible] sources (e.g., Class I and II injection wells)	- Provide technical assistance for hydrogeologic analysis, especially fate and transport of contaminants in the subsurface
Correcti[illegible]	- Extensive regulatory power over corrective action		
Preventi[illegible]			

UTAH	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Strong programs for some mining operations, abandoned mines, hazardous wastes, and disposal of conventional wastewater	- Insufficient programs for small-scale mining operations	
Improve Capabilities		- Insufficient funding - Insufficient staff training - Insufficient legislative and administrative support - Insufficient strategy for groundwater protection	- Clarify legal interpretations of Federal regulations
Standards			
Detection		- Insufficient monitoring - Difficulties obtaining site access	- Provide funding for data collection and monitoring
Correction		- Lack of State cleanup fund - Inadequate enforcement	- Provide an information clearinghouse on successes in dealing with contamination problems
Prevention			

VERMONT	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	- Authority to address most types of groundwater contamination problems		
Improve Capabilities		- Insufficient funding	- Provide funding for development and implementation of State programs
Standards			
Detection			
Correction	- Adequate authority		
Prevention			

VIRGINIA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources			
Improve Capabilities		▪ Insufficient funding ▪ Inadequate staff expertise	▪ Provide funding to help deal with groundwater contamination
Standards			
Detection			
Correction	▪ Program for emergency response ▪ Funding program for cleanup of oil spills		
Prevention			

WASHINGTON	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	▪ [illegible] tence of laws and regulations for [illegible] sources	▪ Insufficient resources ▪ Lack of overall strategy for groundwater protection ▪ Policy conflicts and difficulties with interagency coordination ▪ Insufficient staff expertise	
Standards		- Lack of groundwater quality standards	- Accelerate research and development on standards, toxicology, and risk assessment
Detection			▪ Provide funding for additional groundwater quality monitoring through USGS ▪ Accelerate research and development on laboratory analysis
Correction		- Insufficient staff [illegible]	- Establish cleanup criteria
Prevention			

WEST VIRGINIA	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources		- Logistical difficulties in addressing large numbers of dispersed, small facilities	
Improve Capabilities		- Insufficient funding - Priorities given to surface water	I Provide funding for implementation of State programs II Train State staff II Provide an information clearinghouse
Standards			
Detection		II Insufficient funding II Insufficient staff expertise	I Provide technical assistance for hydrogeologic analysis with emphasis on monitoring, statistical treatment of sample results, and migration and fate of contaminants
Prevention			

WISCONSIN	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	+ Programs for drinking water and wastewater	+ Insufficient programs to deal with spill prevention, pesticide management, and gasoline storage tanks	
Improve Capabilities		+ Insufficient funding + Difficulty obtaining State legislative support + Difficulties with Federal programs	- Provide funding for development and implementation of State programs
Standards		- Lack of numeric groundwater quality standards	+ Accelerate research and development on standards + Accelerate development of drinking water advisories for chemicals found in groundwater
Detection			+ Provide funding for data collection
Correction			
Prevention		+ Insufficient resources for prevention programs	+ Improve FIFRA to ensure that pesticides contaminating groundwater are no longer used and that pesticides are tested for contamination potential before marketing

WYOMING	EXAMPLES OF STRENGTHS	EXAMPLES OF PROBLEMS	EXAMPLES OF DESIRED FEDERAL ASSISTANCE
Sources	▪ Groundwater standards that apply to all potential sources of groundwater contamination		
Improve Capabilities		▪ Insufficient staff expertise ▪ Insufficient funding	▪ Provide ng for additional State staff
Standards	▪ Standards for groundwater quality		
Detection			▪ Provide funding for laboratory equipment and sampling and testing by private labs
Correction		▪ Insufficient programs and resources to address problems with older facilities	
Prevention			

Source: Office of Technology Assessment

C.5 OTA STATE SURVEY RESPONSES: SELECTED STATE ISSUES

This appendix lists State contacts for obtaining information on various topics that may be relevant to the development of national policy initiatives to protect groundwater from contamination. Principal agency contacts named in survey responses are given. The issues presented for each State were selected if the State appeared especially articulate or experienced with the subject, based on its responses to the OTA survey.

STATE/CONTACT	EXAMPLES OF ISSUES
ALABAMA Department of Environmental Management 205-271-7700	experienced with implementation of Underground Injection Control Program
ALASKA Department of Environmental Conservation, Environmental Sanitation Section 907-465-2640	experienced with enforcement issues related to wastewater discharges, landfills, and solid waste disposal sites
ARIZONA Department of Health Services, Water Quality Management Section 602-255-1180 Departmnt of Water Resources 602-255-1586	experienced with development of integrated program for groundwater quality and quantity recognizes need for Federal assistance on establishing quality standards for groundwater experienced with strong State support for protecting groundwater resources and quality
ARKANSAS Department of Pollution Control and Ecology, Water Division 501-562-7444	experienced with brine disposal programs experienced with enforcement issues related to solid waste experienced with salt-water contamination in agricultural areas
CALIFORNIA State Water Resources Control Board, Toxics Special Projects 916-322-8401 Department of Health Services, Sanitary Engineering Branch 916-324-2216 Department of Food and Agriculture, Environmental Monitoring and Pest Management 916-322-2395	experienced with development of programs for pesticides and underground storage tanks experienced with laboratory certification program experienced with confidentiality of well log daca recognizes technical inadequacies of RCRA regulations

STATE /cONTRACT	EXAMPLES OF ISSUES
COLORADO Department of Health, Off ice of Health Protection 303-320-8333	experienced with development of groundwater protection program experienced with problems with uranium facilities
CONNECTICUT Department of Environmental Protection, Water Compliance Unit 203-566-2588	experienced with State water quality standards and classification system experienced with development of groundwater quality monitoring program experienced with coordination with USGS
DELAWARE Department of Natural Resources and Environmental Control 302-736-4793	experienced with development of groundwater protection program experienced with professional staffing problems experienced with agricultural, septic system, and salt-water intrusion problems
FLORIDA Department of Environmental Regulation, Groundwater Section 904-488-3601	experienced with development of groundwater quality monitoring program experienced with underground storage tank problems experienced with new State legislation to protect groundwater quality recognizes need for toxicology information experienced with karst environments
GEORGIA Department of Natural Resources, Environmental Protection Division 404-656-4713	experienced with development of groundwater quality monitoring program experienced with salt-water intrusion experienced with development of groundwater management plan
HAWAII Department of Health 808-548-6767 Department of Agriculture 808-548-7124 Department of Land and Natural Resources 808-548-7643	experienced with pesticide problems recognizes need for toxicology information
IDAHO Department of Health and Welfare, Division of the Environment 208-334-4250	experienced with development of groundwater management plan recognizes need for adequate and guaranteed long-term funding experienced with problems with irrigation injection wells

STATE/CONTACT	EXAMPLES OF ISSUES
ILLINOIS Environmental Protection Agency, Division of Public Water Supplies 217-782-9470	experienced with statewide mapping of potential for contamination of shallow aquifers by waste-related sources experienced with use of 208 and 205j funds for groundwater management issues
INDIANA State Board of Health, Division of Water Pollution Control 317-862-9360	experienced with problems with laboratory analytical capabilities experienced with problems from insufficient water use information
IOWA Department of Water, Air, and Waste Management 515-281-8692	experienced with non-point sources of contamination experienced with statewide inventory of active and abandoned wells experienced with evaluation of groundwater contamination in karst region of the State experienced with use of 208 funds for groundwater issues
KANSAS Department of Health and Environment, Bureau of Oil Field and Environmental Geology 913-862-9360	experienced with implementation of brine disposal program recognizes technical inadequacies of RCRA regulations
KENTUCKY Department for Environmental Protection 502-564-2150	experienced with problems with mining activities experienced with on-site sewage system problems experienced with State agency coordination issues recognizes problems with Federal judicial interpretations of SMCRA and CWA (NPDES) recognizes conflicts and inconsistencies among Federal statutes experienced with karst environments experienced with State priorities for surface water rather than groundwater problems
LOUISIANA Department of Natural Resources, Office of Environmental Affairs 504-342-1265	experienced with industrial sources of contamination experienced with recharge area mapping recognizes need for experienced staff
MAINE Department of Environmental Protection, Division of Management Planning 207-289-2437	experienced with problems with widespread sources including agricultural practices and underground gasoline storage tanks

STATE/CONTACT	EXAMPLES OF ISSUES
MARYLAND Department of Health and Mental Hygiene, Off ice of Environmental Programs 301-383-7328	experienced with mapping to assess potential for groundwater contamination recognizes that CWA transfers surface water contamination problems to groundwater
MASSACHUSETTS Off ice of Environmental Affairs, Department of Environmental Quality Engineering 617-292-5529	experienced with salt-water intrusion experienced with mapping to assess potential for groundwater contamination experienced with development of comprehensive monitoring program experienced with development of environmental emergency response plan experienced with development and implementation of funding program for municipalities to purchase land for aquifer protection experienced with use of 208 and 205j funds for groundwater protection
MICHIGAN Department of Natural Resources, Groundwater Quality Division 517-373-1947	experienced with State priority system to rank sites requiring cleanup experienced with assessing the magnitude of groundwater contamination experienced with development of draft response and incident tracking procedures expressed interest in non-regulatory approaches to prevention such as environmental impairment liability insurance experienced with use of 208 and 205j funds for groundwater protection recognizes that CWA transfers surface water contamination problems to groundwater recognizes limitations of Federal funding sources
MINNESOTA Pollution Control Agency 612-296-7339	experienced with development and implementation of statewide groundwater monitoring network recognizes need for national program and national goals to assist States
MISSISSIPPI Department of Natural Resources 601-961-5099	experienced with use of groundwater mdeling experienced with implementation of State Underground Injection Control Program
MISSOURI Department of Natural Resources 314-751-3195	experienced with karst environments experienced with need for trained personnel

STATE /CONTACT	EXAMPLES OF ISSUES
MONTANA Department of Health and Environment 406-449-3948	experienced with development of groundwater permit regulations and quality standards experienced with problems with dryland farming and saline seeps
NEBRASKA Department of Environmental Control 402-471-2186	experienced with problems with agricultural sources experienced with problems over lack of State authority for groundwater quality and quantity interactions experienced with problems over limited scope of groundwater protection programs experienced with use of 208 funds for groundwater protection
NEVADA Department of Conservation and Natural Resources 702-885-4670	experienced with problems with septic tanks
NEW HAMPSHIRE Water Supply and Pollution Control Commission 603–271-3503	experienced with the development and implementation of a groundwater permit program experienced with program for annual sampling of water supplies for industrial contaminants and pesticides experienced with problems due to insufficient personnel experienced with use of health advisories as drinking water and groundwater quality standards concerned about interstate groundwater quality
NEW JERSEY Department of Environmental Protection 609-292-1185	recognizes need for storage tank legislation experienced with use of State NPDES Program for discharges to groundwater that are both intentional (e.g., from injection wells) and unplanned (e.g., from landfills and lagoons) experienced with aquifer mapping experienced with use of more stringent groundwater standards for the ecologically sensitive Pinelands experienced with use of 208 funds to establish State groundwater program

STATE /cONTACT	EXAMPLES OF ISSUES
NEW MEXICO Health and Environment Department 505-984-0020	experienced with development and implementation of groundwater quality protection program experienced with problems with mining and milling facilities, hydrocarbon fuel facilities, and dairies experienced with use of a priority listing of violations of groundwater quality standards experienced with use of State groundwater quality standards for selected substances experienced with problems in obtaining water rights for some corrective action alternatives experienced with technical deficiencies of liners experienced with an improvement program for State laboratories experienced with use of 208 funds for groundwater protection experienced with problems of surface water contamination being transferred to groundwater
NEW YORK Department of Environmental Control 518-457-3495	experienced with development of bulk storage program experienced with trying to target groundwater program to protect key aquifers experienced with problems with pesticides and fertilizers experienced with development of groundwater management program experienced with development of groundwater quality standards for organic chemicals experienced with use of 208 funds for groundwater protection experienced with development of groundwater classification system
NORTH CAROLINA Department of Natural Resources and Community Development 919-733-5083	experienced with development of groundwater protection program experienced with development of groundwater classification system experienced with problems with current Federal approach to groundwater protection experienced with conflicts between groundwater and surface water management
NORTH DAKOTA State Health Department 701-224-2354	experienced with natural contamination problems experienced with establishment of State task force to develop groundwater protection strategy

STATE / CONTACT	EXAMPLES OF ISSUES
OHIO Environmental Protection Agency 6 14-455-83(-)7	experienced with problems with non-hazardous industrial lagoons recognizes need for Federal funds specifically designated for groundwater programs
OKLAHOMA Department of Pollution COntrol 405-271-4677	experienced with development of program to plug abandoned wells experienced with problems with oil development and nitrate contamination recognizes benefits of Underground Injection Control Program experienced with use of 208 funds for groundwater protection
OREGON Department of Environmental Quality 503-229-6065	experienced with development and implementation of on-site waste program experienced with use of 205j and 208 funds for groundwater protection experienced with use of State NPDES Program to protect groundwater experienced with adverse effects of nitrate contaminated groundwater on surface water
PENNSYLVANIA Department of Environmental Resources 717-787-2666	experienced with development of groundwater quality standards experienced with development of groundwater quality monitoring strategy experienced with use of 208 funds for groundwater protection experienced with problems of losing trained personnel to industry experienced with use of State NPDES Program to protect groundwater quality recognizes lack of applicability of Sole Source Aquifer Program to State hydrogeologic conditions
RHODE ISLAND Department of Environmental Management 401-277-2234	experienced with problems with State agency coordination experienced with strong laboratory analysis program
SOUTH CAROLINA Department of Health and Environmental Control 803-758-5213	experienced with implementation of analytical assistance program for private well owners experienced with use of 208 funds for groundwater protection recognizes need for a comprehensive national policy to protect and improve groundwater quality experienced with problems of surface water contamination being transferred to groundwater

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STATE /CONTACT	EXAMPLES OF ISSUES
SOUTH DAKOTA Department of Water and Natural Resources 605-773-3351	experienced with development of State groundwater strategy experienced with use of 208 funds for groundwater protection
TENNESSEE Department of Health and Environment 615-741-7206	experienced with septic tank problems experienced with enforcement problems experienced with use of 205j funds for groundwater protection
TEXAS Department of Water Resources 512-475-2786	experienced with problems associated with obtaining water use information, water rights, and site access experienced with development and implementation of Underground Injection Control Program for Class I, 111, IV, and V wells
UTAH Department of Natural Resources and Energy 801-533-5771	experienced with development and implementation of programs for active and abandoned mining operations experienced with problems of coordinating programs of numerous State agencies
VERMONT Department of Water Resources and Environmental Engineering 802-828-2761	experienced with development of State groundwater protection strategy experienced with development of program to protect recharge areas of community drinking water supplies (Aquifer Protection Areas) experienced with program to monitor dairy water supplies experienced with development of formal procedures for reporting and handling of groundwater contamination incidents experienced with use of 205j and 208 funds for groundwater protection experienced with implementation of State and Federal hazardous waste management programs experienced with evaluation of groundwater quality of non-community water supplies
VIRGINIA State Water Control Board 804-257-6384	experienced with program for 24-hour emergency response

STATE/CONTACT	EXAMPLES OF ISSUES
WASHINGTON Department of Ecology 206-459-6704	experienced with development of groundwater protection strategy experienced with use of 205j funds for groundwater
WEST VIRGINIA Department of Natural Resources 304-348-5935	experienced with development of groundwater protection strategy experienced with program to map recharge areas
WISCONSIN Department of Natural Resources 608-267-9350	experienced with use of State NPDES Program for groundwater experienced with development of State groundwater program and legislation experienced with problems of surface water contamination being transferred to groundwater experienced with pesticide problems
WYOMING Department of Environmental Quality 307-777-7781	experienced with development of State groundwater quality standards

Source: Office of Technology Assessment.