
Chapter 12
Overview of the States
and Prevention

Contents

	<i>Page</i>
Chapter Overview	235
State Prevention Approaches	235
Source Programs	237
Aquifer Protection	239
Impact Reduction	239
Chapter 12 References	240

FIGURE

<i>Figure No.</i>	<i>Page</i>
6. OTA State Survey Responses: Number of States With Programs To Prevent Groundwater Contamination From Selected Sources	238

Overview of the States and Prevention

CHAPTER OVERVIEW

In this chapter, State responses to survey questions about their activities to prevent groundwater contamination are briefly described.¹ (See the section *OTA State Survey* in ch. 4 for guidance in interpreting survey results.) Approaches that States use for prevention are highlighted along with programs for sources, aquifer protection, and impact reduction.

In summary, the States are using a variety of approaches to prevent groundwater contamination. They give priority to and are developing and implementing programs for prevention of contamina-

tion from particular sources, especially waste-related point sources.

States' problems with prevention and desires for Federal assistance are discussed in chapter 4. The chapter describes the States' problems with prevention as mostly institutional. The States noted a lack of prevention programs, deficiencies in some types of programs, and a lack of resources to implement existing institutional mechanisms. The technical adequacy of prevention mechanisms is also a concern. The States want Federal assistance for prevention mostly in the form of funding and research and development on control techniques for additional sources. They also want the Federal Government to assist information exchange among the States and to improve Federal prevention programs that they perceive as unsuccessful.

¹ Given the OTA study focus on already contaminated groundwater, the OTA survey did not question the States on their use, preferences, and problems with specific techniques for prevention. For more detailed accounts of selected State programs see Henderson, et al., 1984

STATE PREVENTION APPROACHES

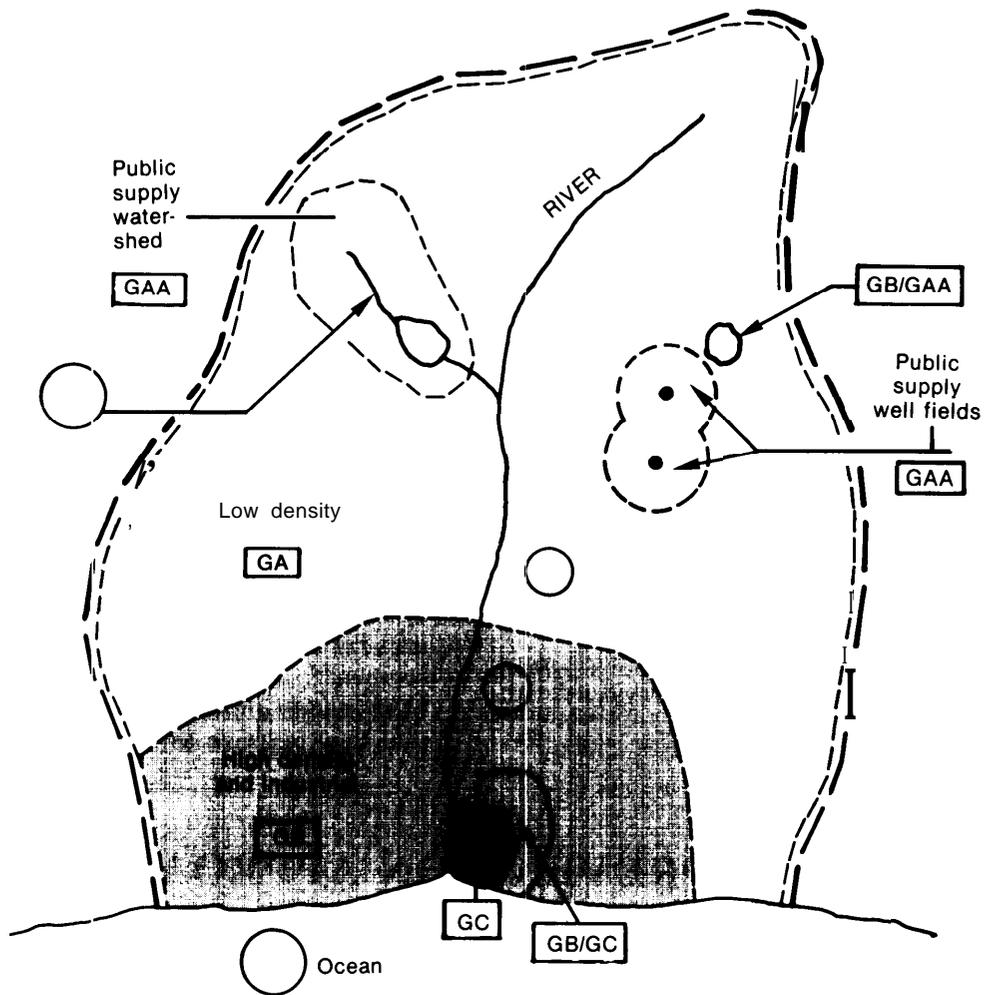
The States use a variety of approaches to prevent contamination—directed at sources, aquifer protection, and impact reduction. These approaches, which vary among the States, consist of components including: siting requirements; design and operating requirements (e. g., discharge requirements, Best Management Practices, construction standards, and closure standards); land use controls; and deed restrictions.

Programs have already been implemented in many States. In others, programs are being developed. Legislation is required in a small number of States (fewer than 10) to authorize programs that they are working to develop.

Different components of State prevention programs may be mandatory or voluntary. For example, mandatory permit requirements may apply to facility siting and/or design and operation; through

technical assistance and public education activities, a State may encourage voluntary use of Best Management Practices to minimize the potential for contamination from particular activities and facilities.

Groundwater classification systems, general policies about the degradation of groundwater, and/or the protection of public health and the environment guide implementation of prevention programs in some States. Classification systems have both advantages and disadvantages when used for this purpose (as described by Miller, 1984). Advantages relate primarily to establishment of a formal mechanism for determining where and to what extent water quality protection measures are applied. Disadvantages relate primarily to technical difficulties in establishing classification boundaries (e. g., insufficient data) and policy conflicts in defining water quality objectives for various classifications (e. g.,



Groundwater classification:

- GAA** Public water supply well fields
- GA** Suitable for drinking water use
- GB** Areas affected by known pollutant sources
- GC** Waste-receiving zones

- Drainage boundary
- - - - Groundwater classification boundary
- Surface water classification

Credit: Geraghty & Miller, 1983

Groundwater classification schemes are used to facilitate decisions about groundwater quality protection in some States. The example shown illustrates the groundwater classification system applied by the State of Connecticut.

acceptability of allowing a resource to be degraded in certain areas).² Even if classification systems are not used as a formal basis for decisionmaking about siting or the design and operation of facilities, the aquifer information that is associated with these classifications usually contributes to prevention decisions as well as decisions on priorities for detection and correction. Twenty-three States classify groundwater on the basis of various characteristics useful for making prevention decisions. For example, classifications are based on: the natural quality differences in aquifers which affect water use (e. g., total dissolved solids); characteristics that may make

²For a detailed discussion of advantages and disadvantages of groundwater classification systems and a description of some State programs, see Magnuson, 1981. Additional State classification programs are described in Pyc, et al., 1983 and API, 1983.

aquifers vulnerable to contamination (e. g., water table v. confined aquifers); characteristics that affect the development of water supplies (e. g., high v. low yield); and variations in population, average use rate, contamination problems, and availability of alternative groundwater resources.

Source Programs

Prevention programs that the States have either implemented or are developing are related primarily to sources. Ten States explicitly commented on the limited coverage of their prevention activities—that programs do not address all recognized sources of potential contamination. For example, one State noted that many of its programs are applicable only to landfills, wastewater lagoons, and land applica-



Photo credit: State of Florida Department of Environmental Regulation

State public education programs are being designed to promote awareness of improper disposal methods that can result in groundwater contamination. Some programs authorize the collection of hazardous wastes from small quantity generators, including households.

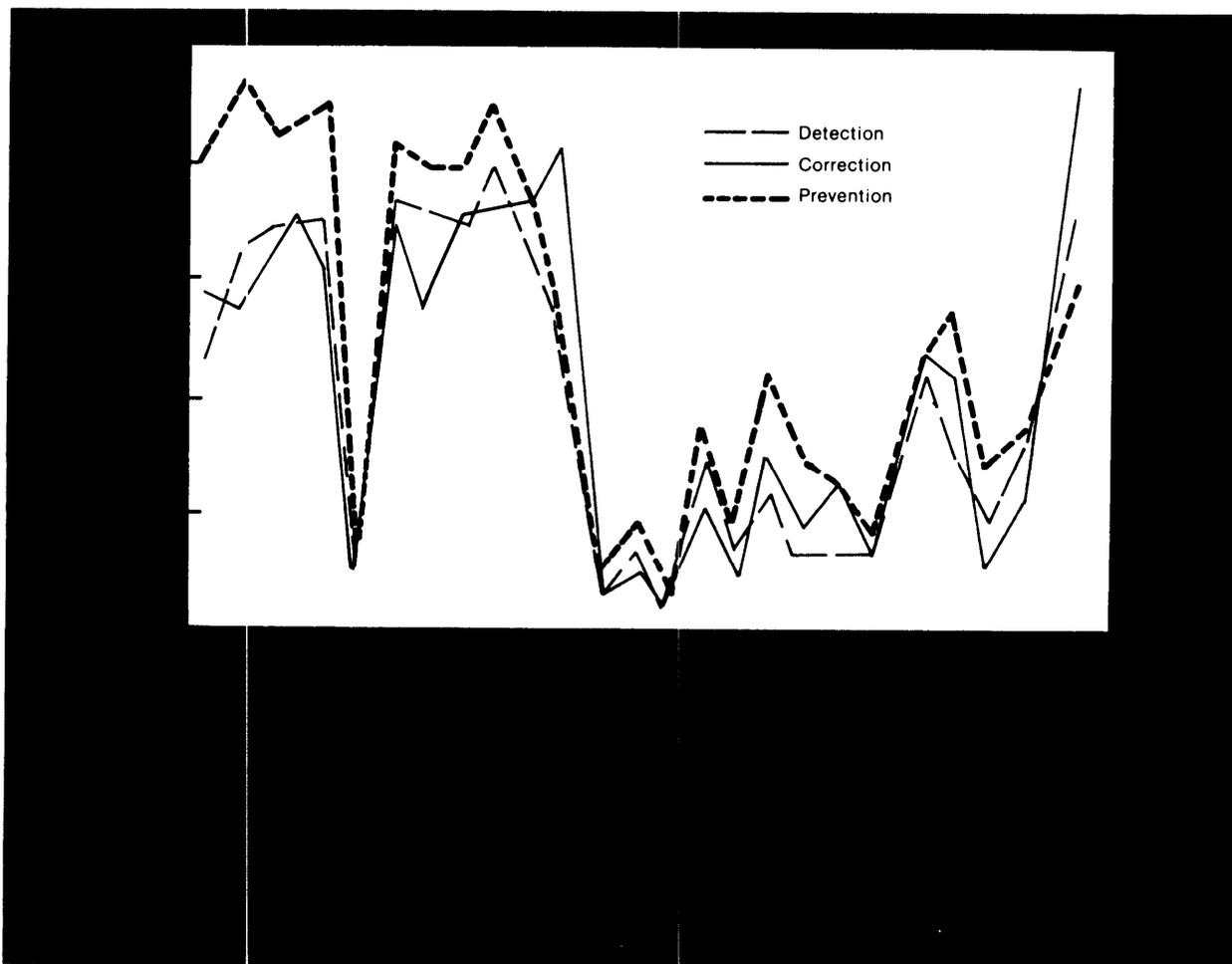
tion of sewage sludge, and are not applicable to agricultural activities;. In general, waste-related point sources are addressed in more States than non-waste and non-point sources.

As shown in figure 6, more States have programs for prevention of contamination from various sources—and give priority to these programs—than for detection or correction of contamination. Also, more States have prevention programs for and give priority to sources in OTA Categories I (e. g., injection wells) and II (e. g., surface impoundments) than in Categories III, IV, V, and VI. Not all facilities and/or activities for each of these source types

are covered in State prevention programs. For example, in one State, well construction standards apply only to drinking water wells; in another, such standards apply to all wells in artesian (confined) aquifers; and in a third State, although standards apply to all wells, they are not strictly applied to private wells or to agricultural wells.

Permit programs for design and operation of different sources may be oriented to the overall performance of a facility or related to certain technology requirements. For example, facilities that discharge substances to groundwater may have to satisfy groundwater quality standards. Technology

Figure 6.—OTA State Survey Responses: Number of States With Programs to Prevent Groundwater Contamination From Selected Sources



See fig. 2 for footnotes a through g.

SOURCE: Office of Technology Assessment.



Photo credit: U S Environmental Protection Agency

Voluntary replacement of underground gasoline storage tanks is one technique that many States rely on to prevent groundwater contamination.

requirements may include, for example, the use of liners and leachate collection systems for landfills and septic tanks of specified sizes.

Aquifer Protection

A few States have programs that address the protection of aquifers and/or recharge areas. For example, in some States where sole source aquifers have been designated, State or local restrictions have been placed on certain activities (see ch. 11). One State provides funds for municipalities to purchase land for aquifer protection.

Impact Reduction

Although most State activities appear to be directed at preventing (or minimizing the potential for) groundwater contamination, some States have programs to prevent adverse impacts associated with potential contamination. For example, in one State solid waste facilities must be recorded on property deeds. This measure is intended to avoid the unknowing purchase of former landfills.

CHAPTER 12 REFERENCES

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