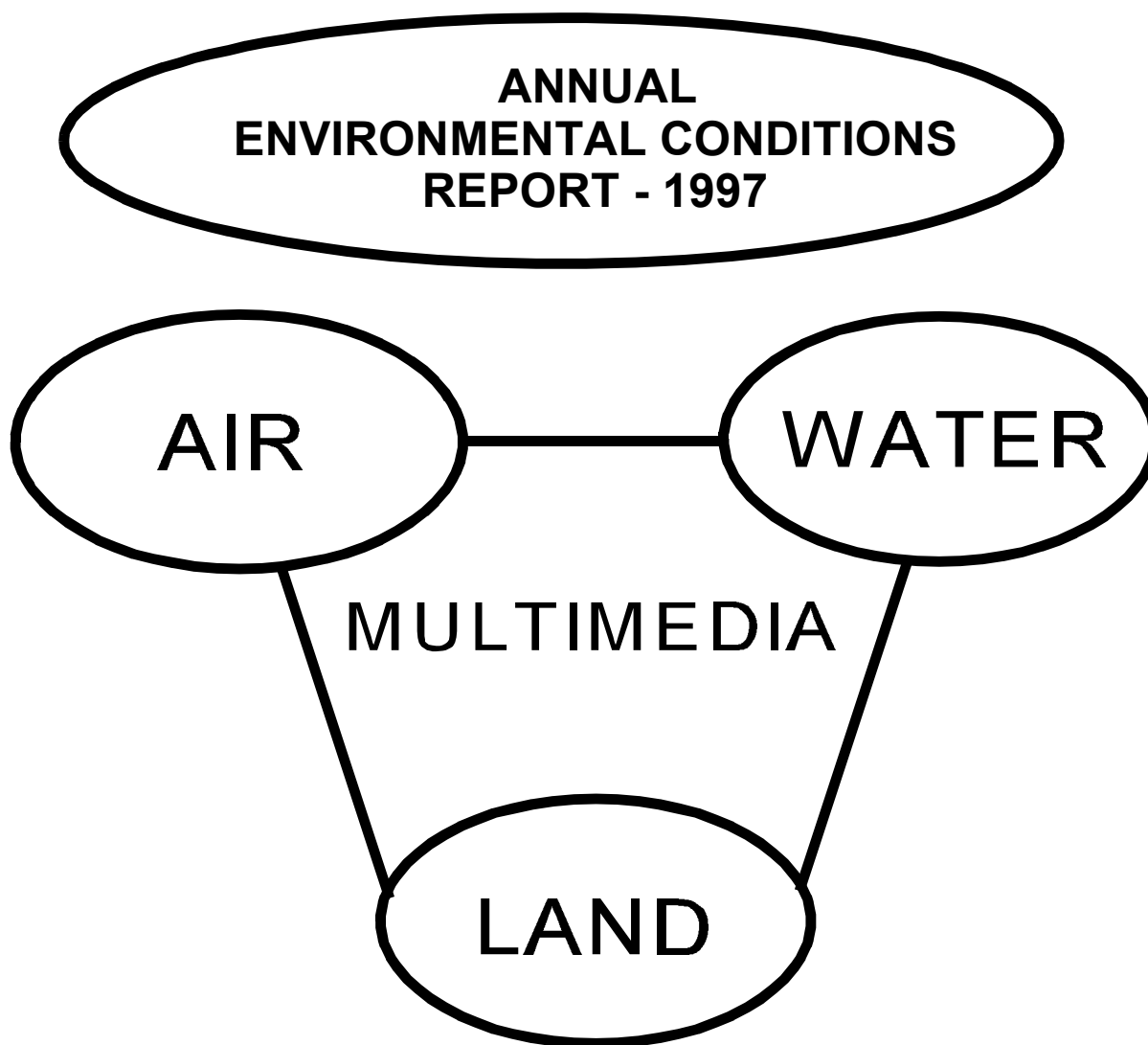

IEPA/ENV/98-007



**Prepared by
Illinois EPA**

June, 1998

PREFACE

Illinois continues to build a new partnership with USEPA that more clearly focuses on specific environmental progress goals and communicates the results to the public in a clearer and more concise fashion. This Third Annual Environmental Conditions Report has been significantly revised to reflect the performance measurement system jointly adopted by the Environmental Council of States and the USEPA.

This third report continues to show a clear pattern of improvements across much of our environmental landscape. Once again, toxic chemical releases showed a downward trend. We continue to see more waterways achieve good condition and to see some reduction in nonpoint source impacts. The percentage of public drinking water supplies meeting all standards also continued to increase. On the air front, the number of days in which the health standard for ground-level ozone (smog) was exceeded did not increase, and seasonal emissions of volatile organic materials continued a downward trend. There was also a dramatic improvement in cleaning up contaminated land. More than 19,000 acres of land (about 30 square miles) were remediated in 1997, a significant increase from the acreage reported in 1996.

There are several new features that appear for the first time in this report. The air section now includes a map showing reductions in ozone across the state expected by the year 2007. The water section includes an expanded target group for excess pollutant load discharged. Since the year 2000 goal was met in 1996 for the initial target group (325 facilities), 422 more facilities have been added and will be expected to meet the original goal. In the land section, a new map indicates where household hazardous waste collections and used tire collections took place, and where compost facilities are located in Illinois. The new section about the Industrial Material Exchange Service also indicates that more than 314 million gallons of materials have been diverted from landfills and reused by Illinois companies through this special program. Another first for this year's report is the use of surveys to gauge the effectiveness of our environmental education events. The report also highlights the innovative programs the Agency has helped pioneer nationally to foster more flexible and creative solutions for a safe and clean environment, such as emissions trading, regulatory innovation projects with industry, and the Brownfields initiative.



The Agency welcomes comments and suggestions on the goals, objectives and measures outlined in this report and seeks a continuing dialogue with the public and interest groups that have a stake in environmental protection. We hope you find this report a helpful blueprint for participating in that dialogue.

Mary A. Gade, Director

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ANNUAL ENVIRONMENTAL CONDITIONS REPORT - 1997

Introduction

This annual environmental conditions report is prepared by the Illinois EPA to help focus attention on environmental results. As part of our annual performance agreement with Region 5, USEPA, we committed to prepare and distribute this report. The FY98 agreement uses the performance measurement hierarchy ("SMART chart") as a guide for program targets and measurements. In turn, we have revised this report to reflect this new measurement approach. We also reformatted the report around the three major media programs and multimedia management.

We recognize that our programs are still learning how best to apply this approach. In fact, we are aware of some definitional inconsistencies that have not been resolved during this reporting year. Thus, we expect more refinements as staff gain experience with these targets and measures.

Public Review

The Illinois EPA continues to encourage interested persons to review this report and provide comments regarding our environmental performance. In particular, we are looking for feedback on the major reformatting that was done for this report.

Environmental Progress Agenda

Under the performance partnership system, the states and USEPA envision environmental management being driven more by mutual determination of priorities and accountability for results achieved. In this system, environmental goals and indicators are used as a management tool to help program managers stay on course towards the desired outcomes. As part of this process, we are looking towards better characterization of environmental conditions in general. We also want to present this information in more user friendly ways than was typically done in past technical reports. For the interested reader, Appendix A provides a master list of reference materials that are available as supplemental information and that provide more detailed analyses in many instances.

Several important considerations went into our selection of an agenda for environmental progress. First of all, we want goals, objectives and related measures that are understandable. Secondly, we want to show important environmental quality trends where possible. The resultant environmental goals and objectives for each program are summarized as follows:

AIR QUALITY MANAGEMENT

Goal: Illinois should be free of air pollutants at levels that cause significant risk of cancer or respiratory or other health problems. The air should be clearer (i.e., less smog), and the impact of airborne pollutants on the quality of water and on plant life should be reduced.

Environmental Objectives:

- Maintenance of 98% “good” or “moderate” air quality conditions in the areas of the state outside the Lake Michigan and Metro-East ozone nonattainment areas (standards as of January 1, 1997).
- Maintenance of 95% “good” or “moderate” air quality conditions in the two ozone nonattainment areas (standards as of January 1, 1997).
- Maintenance of attainment status for pollutants other than ozone.
- Attainment of the 1-hour ozone standard by 2007.



The new vehicle emissions test will include a dynamometer (treadmill) test.

WATER QUALITY MANAGEMENT

Goals: **Clean Water** - Illinois rivers, streams and lakes will support all uses for which they are designated including protection of aquatic life, recreation and drinking water supplies.

Safe Drinking Water - Every Illinois Public Water System will provide water that is consistently safe to drink.

Groundwater - Illinois resource groundwater will be protected for designated drinking water and other beneficial uses.



A citizen takes a sample from Lake Springfield to be tested through the Volunteer Lake Monitoring Program.

Environmental Objectives:

- Waterways with Good water quality conditions will increase 10% by the year 2000.
- The percentage of lakes in Good or Fair condition will remain constant from 1995 to the year 2000.
- The percentage of open shoreline miles in Good condition remains constant from 1995 to the year 2000.
- The percentage of the population served by community water supplies who receive drinking water with no short term (acute) or long term (chronic) adverse health effects increases to over 95% by the year 2005 (an increase of 5%).
- A declining trend of groundwater contaminants in Community Water Supply wells will occur through the year 2005.

LAND QUALITY MANAGEMENT

Goal: Safe waste management -
Reduce or control risk to
human health and the
environment from
contaminated sites.

Environmental Objectives:

- Groundwater at sites required to monitor shallow groundwater will be protected to meet the applicable groundwater standards.
- Decreasing trend in significant releases to shallow groundwater at regulated non-LUST facilities over the next five years.
- All injected contaminants are contained in the designated injection zone.
- On an average annual basis, the acres of land where health risk is reduced or controlled is increasing.



Illinois EPA contractors mix household hazardous waste at a recent collection event.

MULTIMEDIA MANAGEMENT

Goal: The multimedia programs do not have separate goals but rather support the goals and objectives listed for the media programs. The four multimedia programs do have program objectives which are listed below.



Fourth grade students from Sangamon County participating in "Toxic Relay" on Earth Stewardship Day, April 24, 1998.

- **Toxic Release Inventory** - Total toxic load on the environment will be steadily reduced towards zero adverse consequences.
- **Emergency Incidents** - The total number of reported emergency release incidents will decline over the next five years.
- **Pollution Prevention** - The amount of pollution eliminated or reduced at source increases each of the next five years.
- **Environmental Education** - Environmental awareness, knowledge and skills are increased for more youth and citizens over the next five years.

Environmental Quality Conditions

The environmental information that is presented in this report comes primarily from sources (e.g., units, facilities, and sites) that are monitored in some manner or from direct monitoring of air, land and water quality. Environmental information about sources is usually available due to some specific regulatory requirement. The environmental performance of these monitored sources does influence some environmental conditions in Illinois and is a good reflection of progress for environmental protection. The overall utility of this type of information is related to the relative proportion of environmental impacts that are within the scope of the regulatory programs.

Information from direct monitoring is mostly a governmental service that is frequently linked to ambient environmental quality standards. Various types of monitoring networks or systems are operated to collect and analyze environmental samples for designated parameters. These systems are often designed to serve various priority environmental protection purposes. Thus, the environmental data that is generated is designed to satisfy these purposes and may have limited applicability for other purposes, such as environmental research. Taken in context, however, these environmental data are still valuable indicators of environmental conditions and, in turn, our efforts to improve those conditions. A more detailed explanation of these measures is provided in Appendix B. In particular, certain technical features are more fully described.

As a special feature of this report, we have also provided “green boxes” in the text to highlight key program performance or present more of the story about the programs. In this way, we hope to make the picture more clear and meaningful for the reader.

AIR QUALITY MANAGEMENT

GOAL

Illinois should be free of air pollutants at levels that cause significant risk of cancer or respiratory or other health problems. The air should be clearer (i.e., less smog), and the impact of airborne pollutants on the quality of water and on plant life should be reduced.

AIRSHED CONDITIONS

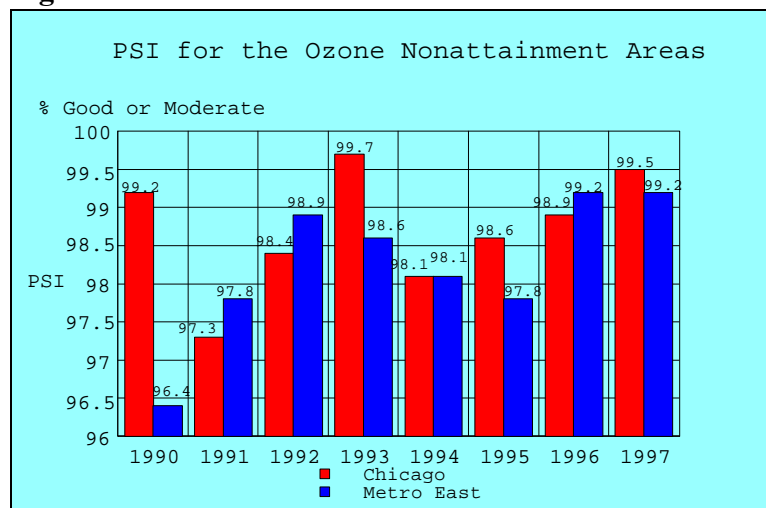
ENVIRONMENTAL OBJECTIVES

1. Maintenance of 98% “good” or “moderate” air quality conditions in the areas of the state outside the Lake Michigan and Metro-East ozone nonattainment areas (standards as of January 1, 1997).
2. Maintenance of 95% “good” or “moderate” air quality conditions in the two ozone nonattainment areas (standards as of January 1, 1997).
3. Maintenance of attainment status for pollutants other than ozone.
4. Attainment of the 1-hour ozone standard by 2007.

Pollutant Standards Index

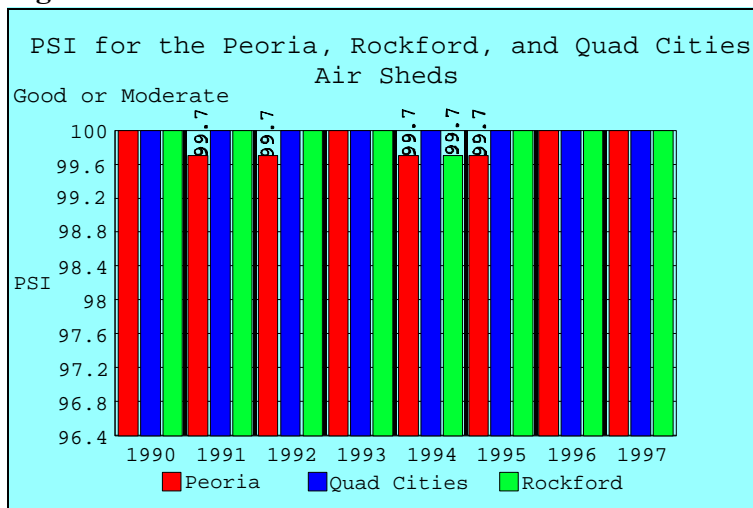
The Pollutant Standards Index (PSI) is a nationally-used means of expressing the quality of the air, rating it on a scale from good to hazardous every day. All of the criteria pollutants are included in the PSI. In the state’s two metropolitan areas, Chicago and Metro-East/St. Louis, ozone is the pollutant that predominates the PSI and causes it to vary (see Figure 1).

Figure 1



Still, in 1997 air quality in the Chicago area was “moderate” to “good” 99.5% of the time and in that range in the Metro-East area 99.2% of the time. Figure 2 illustrates the PSI levels for the Peoria, Rockford, and Quad Cities areas. The air quality in all three areas was in the “moderate” to “good” range all year.

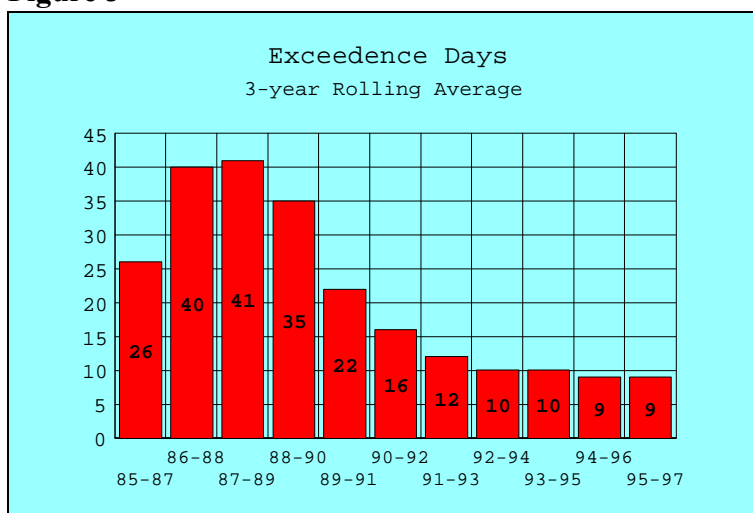
Figure 2



Ozone Problem

Ozone remains the most difficult air quality problem in Illinois despite our success over the past two decades in reducing ozone levels. Although the highest ozone levels are considerably lower, millions of Illinois citizens in two nonattainment areas, seven counties around Chicago and three counties in Metro East/St. Louis, continue to be exposed to levels of ozone considered unhealthy during several days each summer.

Figure 3



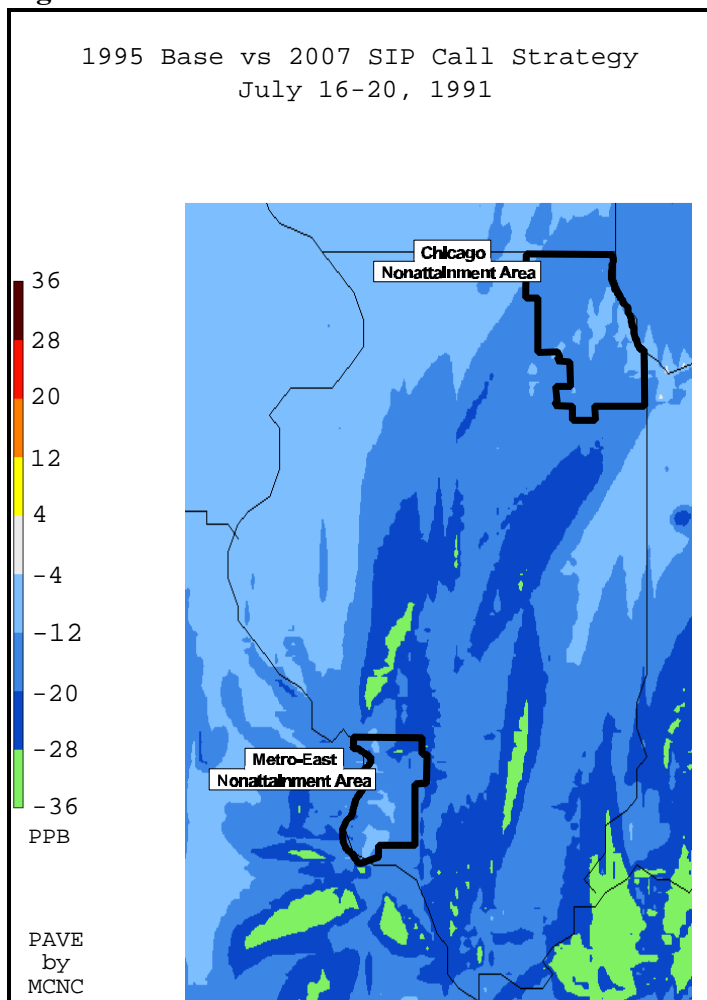
The three-year average of the number of days that the air quality in Illinois exceeded any of the criteria pollutants (ozone, nitrogen dioxide, carbon monoxide, particulate matter, sulfur dioxide, and lead) is illustrated by Figure 3. Ozone is the pollutant that predominates the exceedence days in Illinois.

Ozone results from a chemical reaction in the atmosphere principally between volatile organic material (VOM) and nitrogen oxides (NO_x) in the presence of sunlight on hot summer days. A means of reducing ozone levels is to control emissions of VOM and NO_x. There are many types

of sources of VOM emissions. They include some industrial processes, coatings such as paints and varnishes, and the operation of motor vehicles, to name a few. NO_x emissions are largely the result of combustion processes, such as those that occur at utilities or in the operation of engines.

Because we found the ozone levels entering our nonattainment areas were high, Illinois participated in a multi-state study of ozone transport in an effort to determine ways of reducing those in-coming ozone levels. We found that reducing VOM in the nonattainment areas and NO_x regionally produced the best results. The map in Figure 4 illustrates the reductions in ozone levels that may be obtained from applying a substantial level of NO_x reductions to anticipated ozone levels in 2007, the year by which we must attain the ozone standard in the Chicago area. Here we see reductions of 12 to 20 parts per billion in the boundary areas of the Chicago nonattainment area and in the Metro-East nonattainment area, which will help in our efforts to attain the ozone standard.

Figure 4



PROGRAM PERFORMANCE

PROGRAM OBJECTIVES

1. VOM emissions in the Chicago nonattainment area reduced by at least 217 tons per day by 1999.
2. At least 85% data conformance with federal guidelines.

VOM & NO_x Emissions

Monitoring VOM emissions in the ozone nonattainment areas (Figure 5) and NO_x outside the nonattainment areas (Figure 6) provides an indication of our progress towards reducing ozone. A number of VOM controls were implemented prior to the 1996 ozone season, resulting in a significant reduction in emissions. As high ozone levels occur only during the “ozone season,” May through September in Illinois, we have reported here the seasonal emissions as reported on Annual Emission Reports filed by Illinois industry.

Emissions Reduction Market System

Under ERMS, companies decide how to make needed reductions of VOMs or they may decide to buy or sell trading units to other participants. Rules are in place and baselines are being determined for the ERMS program. When the program becomes effective in 1999, it will be the first VOM trading program in the country.

Figure 5

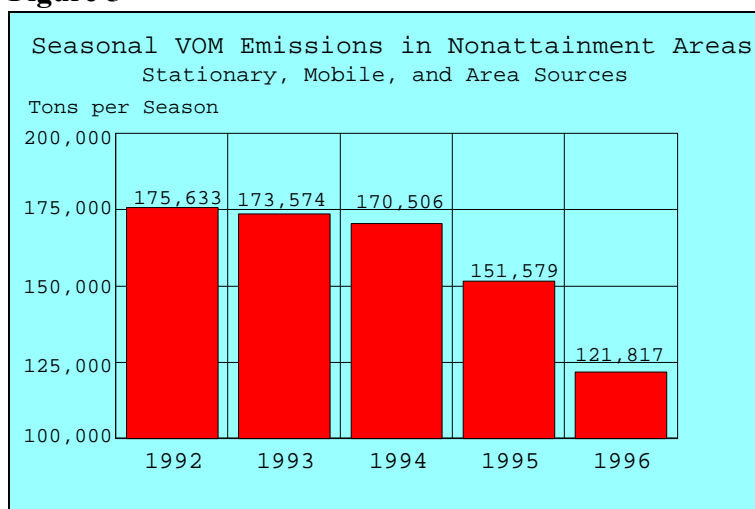
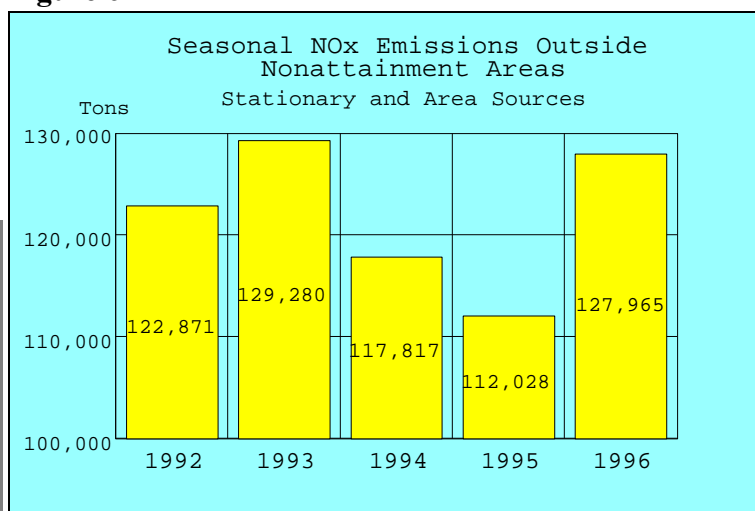


Figure 6

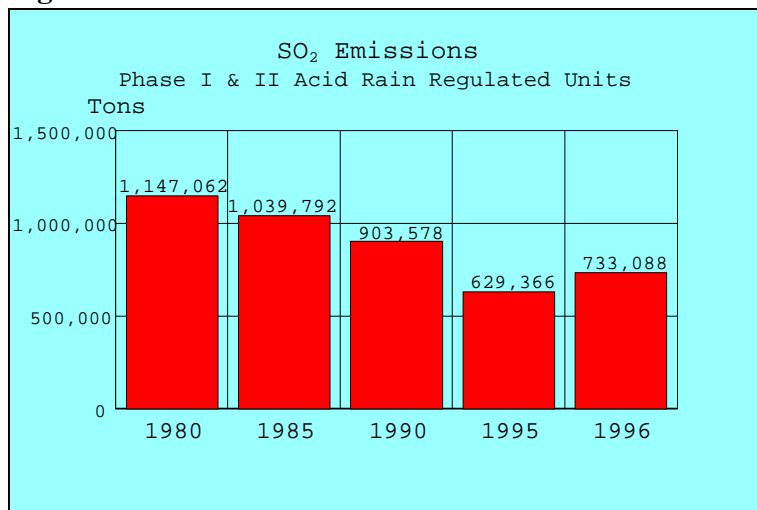


SO₂ Emissions

Sulfur dioxide (SO₂) emissions contribute to acid rain, which has a deleterious effect on lakes, forests, architecture, and other surfaces where it is deposited downwind of the source of the SO₂ emissions. SO₂ emissions from emission units at utilities, the largest source sector for these emissions, are regulated by USEPA through the Acid Rain Program in Title IV of the Clean

Air Act. As Figure 7 illustrates, the amount of SO₂ emissions from Acid Rain-regulated emission units in Illinois increased 17% between 1995 and 1996, partially because of the unavailability of nuclear-powered units, although all Acid Rain-regulated units have sufficient allowances for the levels emitted. Utilization in Illinois increased 9% between 1995 and 1996, while there was a nation-wide increase in utilization of 4% (Source: USEPA). These emissions include both Phase I and Phase II units. In 1996, USEPA changed its method of tracking SO₂ emissions from Acid Rain units to reflect both Phase I and Phase II units, thus the difference in emissions from those reported in the *Environmental Conditions Report-1996*.

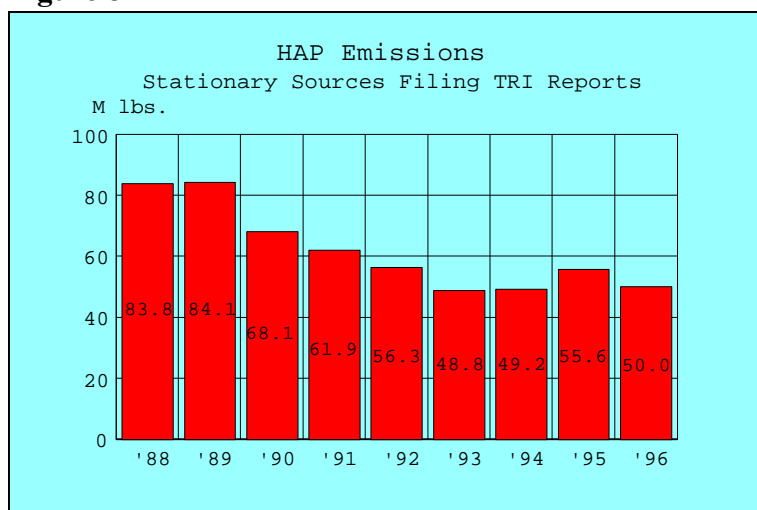
Figure 7



HAP Emissions

Emissions of hazardous air pollutants (HAPs) are either toxic or hazardous in some manner. They may be carcinogenic, highly acidic or alkaline, explosive, or characteristically hazardous for some other reason. Statewide emission levels of HAPs have lowered around the 50-million-pounds level for the past several years (see Figure 8). We expect the trend to become downward as more regulations that focus on HAPs emissions are implemented.

Figure 8



WATER QUALITY MANAGEMENT

CLEAN WATER - Illinois rivers, streams and lakes will support all uses for which they are designated including protection of aquatic life, recreation and drinking water supplies.

GOALS

SAFE DRINKING WATER - Every Illinois Public Water System will provide water that is consistently safe to drink.

GROUNDWATER - Illinois resource groundwater will be protected for designated drinking water and other beneficial uses.

WATERSHED CONDITIONS

ENVIRONMENTAL OBJECTIVES

1. Waterways with Good water quality conditions will increase 10% by the year 2000.
2. The percentage of lakes in Good or Fair condition will remain constant from 1995 to the year 2000.
3. The percentage of open shoreline miles in Good condition remains constant from 1995 to the year 2000.
4. The percentage of the population served by community water supplies who receive drinking water with no short term (acute) or long term (chronic) adverse health effects increases to over 95% by the year 2005 (an increase of 5%).
5. A declining trend of groundwater contaminants in CWS wells will occur through the year 2005.

A watershed is defined as the land area that drains into a stream; the watershed for a major river may encompass a number of smaller watersheds that ultimately combine a common delivery point. The Agency has endeavored to identify five environmental objectives which together provide a general overview of the quality of watershed conditions within Illinois. The watershed concept in this report begins with surface water and proceeds to groundwater.

Waterways

Waterways are an important gauge that indicates overall environmental quality. Illinois' water resources can be impacted by a variety of sources including agriculture, industry, urban development, and mining. These activities can have an affect on the degree to which a given waterbody is safe for human uses and aquatic life. Waters all over the state have been classified as either Good, Fair, or Poor

depending upon whether they can attain the standards necessary for their designated uses. The quality of Illinois' rivers and streams has dramatically improved over the last twenty years. The number of river miles in Good condition has increased from 34.7% in 1972 to 54.3% in 1996. This shows continuing progress toward a goal of 59% of river miles in Good condition by 2000. Illinois EPA has also isolated individual watersheds within the state and detailed the water quality conditions as well as the various impacts to each watershed. Figure 10 highlights the water quality of rivers and streams within the fourteen major river basins in the State.

Figure 9

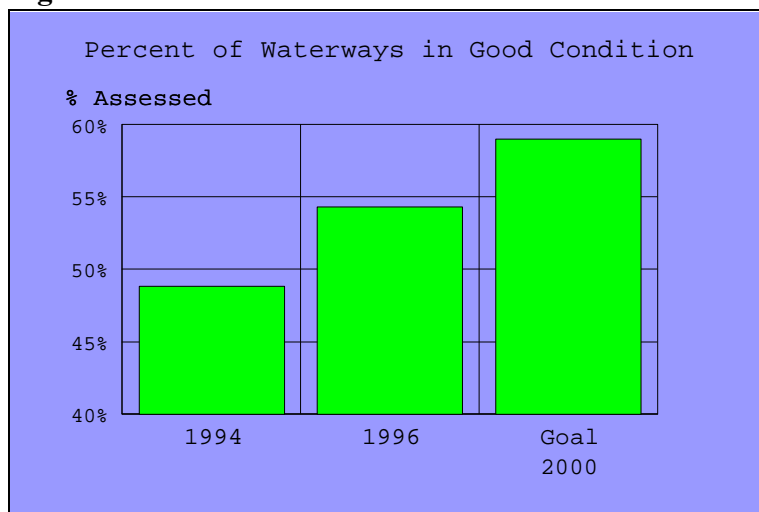
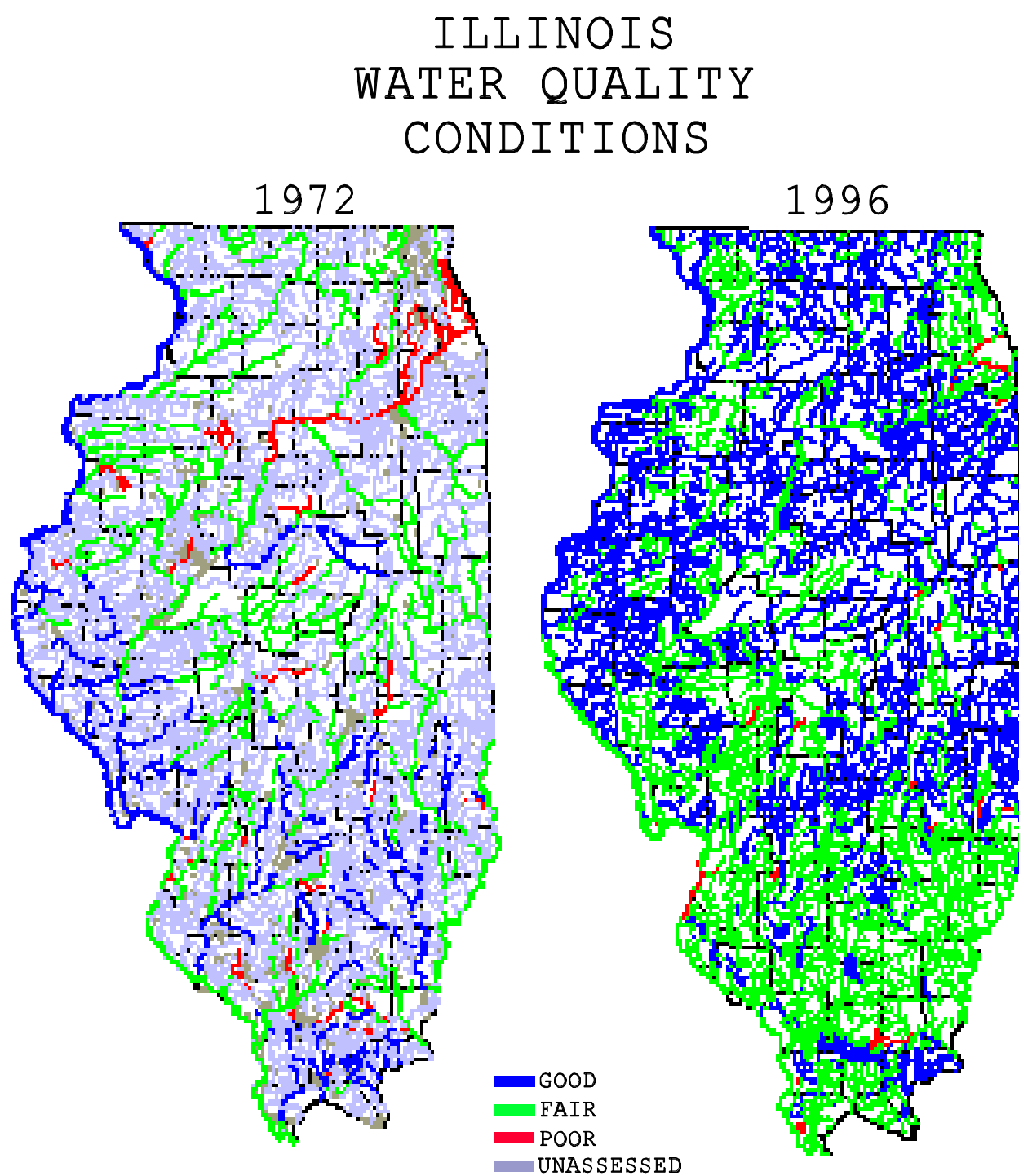
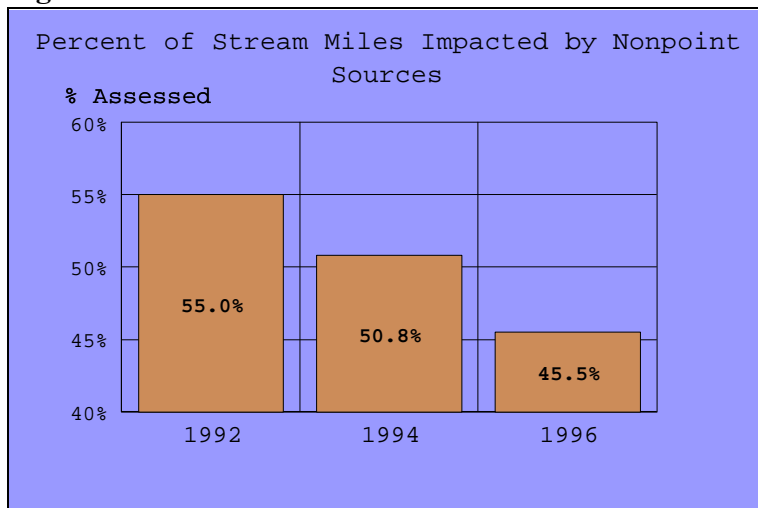


Figure 10



Much of the improvement in watershed conditions over the next five years is expected to come from reducing nonpoint source impacts. As Figure 11 indicates, the percentage of stream miles needing additional nonpoint source corrective actions has declined 10% between 1992 and 1996. The Agency expects an equivalent reduction through the year 2000.

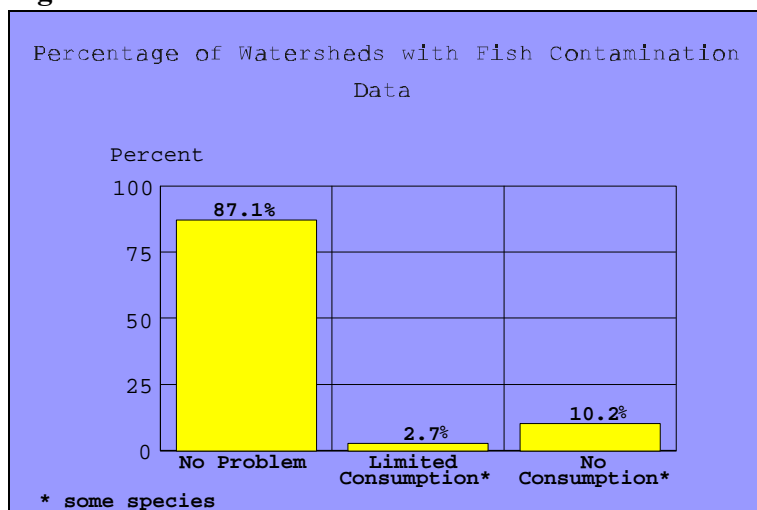
Figure 11

Illinois River

One of the most dramatic improvements in river quality has taken place on the Illinois River. Twenty-five years ago, commercial fisheries were severely threatened by several different pollution sources. Now, more species and numbers of sport fish can be found as well as the “macroinvertebrates” or bugs that the fish eat. Indicative of these improvements was the Professional BassMasters Tournament held in Peoria during the summer of 1995, an event that would never have been considered in years past. In contrast, however, are continuing concerns over excessive sedimentation of parts of the Illinois River. These concerns led to passage of legislation in 1996 that will implement a watershed protection plan for the river.

Fish Contamination

Fish have bioaccumulative characteristics and are thus a key indicator for determining water quality. Contaminant levels in fish are monitored through a cooperative effort between the Illinois Departments of Agriculture, Natural Resources, Nuclear Safety, Public Health, and the Illinois Environmental Protection Agency.

Figure 12

Fish samples are collected from streams, lakes, and impoundments and Illinois' portion of Lake Michigan. Pollutants causing advisories in Illinois fish include pesticides and other compounds such as chlordane, dieldrin, and PCBs, as well as the heavy metal mercury. Since bans have been imposed for these compounds (except mercury) during the mid and late 70's, there has been a considerable reduction in the concentrations of these pollutants found in fish. The Agency expects this trend to continue over the next five years as a result of decreases in the levels of the contaminants remaining in the environment. As the Agency continues to collect samples and possibly expand its fish contamination monitoring program, more information will become available to set a specific numeric goal.

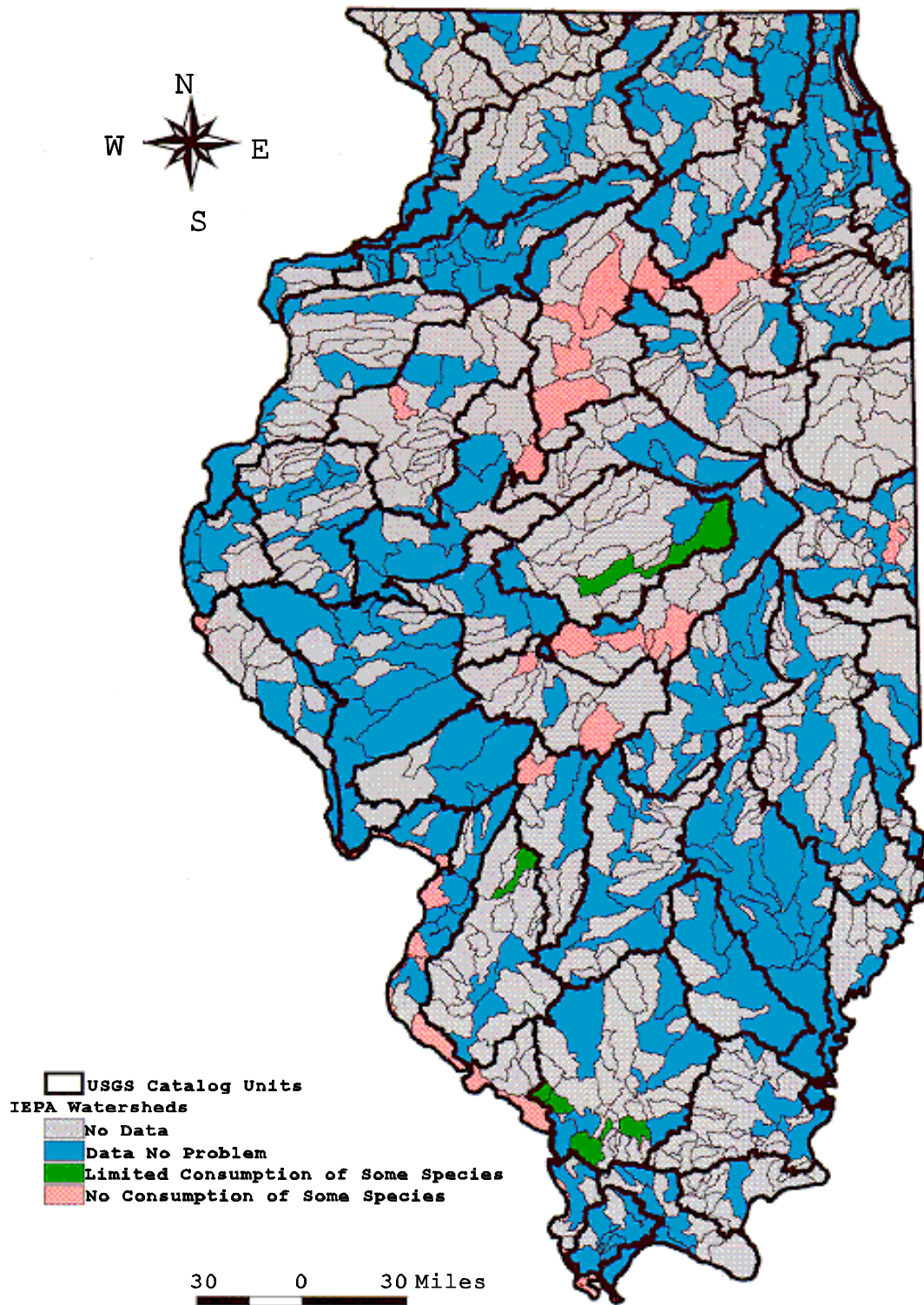
Figure 13 provides a generalized indicator of the geographic areas of the state where fish have been tested and found to be safe for unlimited human consumption, areas where limited consumption is recommended, and areas where no consumption of certain species of fish is recommended. No advisories were issued for 222 watersheds, 7 watersheds received limited consumption advisories, and 26 watersheds received no consumption advisories. Advisory information for specific water bodies is available in the current Illinois Fishing Information Booklet published by the Illinois Department of Natural Resources.

Program Expansion

The Illinois Fish Contaminant Monitoring Program has been operating with limited data for the past several years as a result of budgetary restraints. An increase in funding for Fiscal Year 1998 will allow for additional samples to be collected and analyzed each year. The expansion of the number of water bodies sampled could result in an increase in the number of watersheds in which fish consumption advisories are necessary, especially if a significant number of water bodies are sampled which have not been sampled in the past.

Figure 13

Fish Contaminant Data



Lake Conditions

Another integral part of watershed conditions is the quality of inland lakes. Inland lakes are a vital component of the economic and social well-being of Illinois. Some 90 million visitor days of general lake recreation generates an estimated \$1.78 billion annually to the state's economy. Similar to the way rivers and streams have been evaluated, Illinois lakes have been judged to be in Good, Fair, or Poor condition based upon whether they satisfy the standards necessary for fish consumption, swimming, boating, and drinking water as well as an ability to support fish and wildlife. As shown in Figure 14, 90.3% of Illinois' lakes were rated Good or Fair in 1996, compared to 72.2% in 1972.

Figure 14

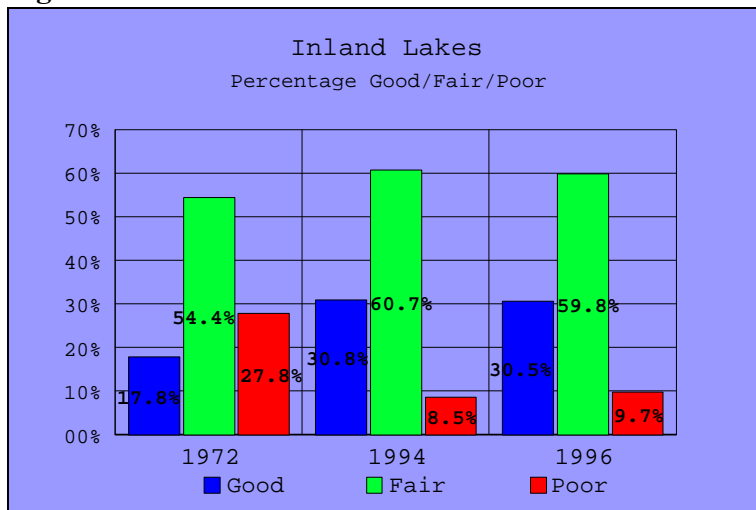
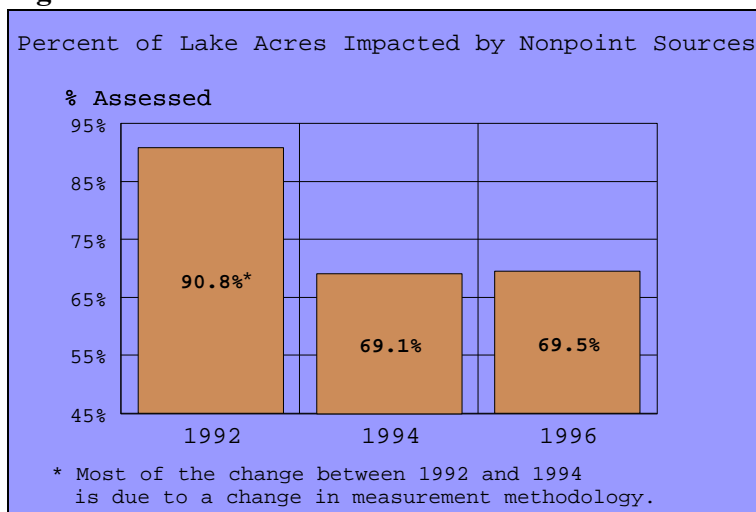


Figure 15 indicates the percentage of lake acres that have use impairments due to nonpoint source impacts. This percentage remained relatively constant between 1994 and 1996 and is expected to remain constant through the year 2000.

Figure 15

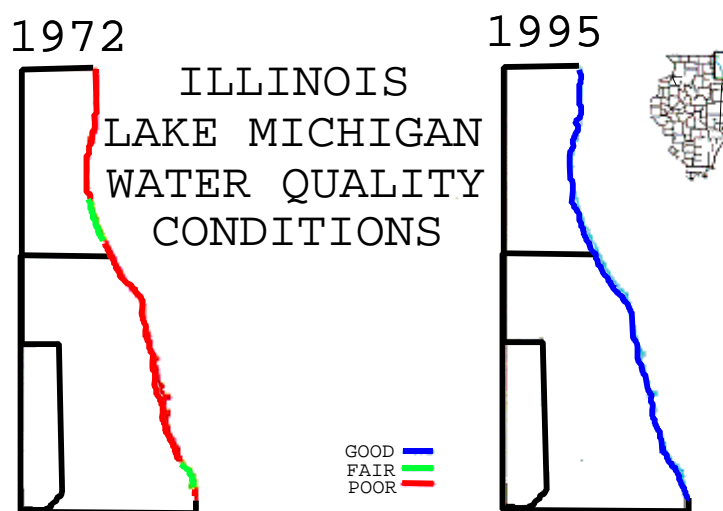


Conservation 2000

Since SFY96, the Agency has received state funding through the governor's "Conservation 2000" initiative to implement new and expanded inland lake management programs. A total of 16 lake study and restoration projects have since been funded through the new *Illinois Clean Lakes Program*. The new *Priority Lake and Watershed Implementation Program* has funded shoreline erosion control activities at six high-priority lakes. Some 227 schools and other not-for-profit organizations have received small *Lake Education Assistance Program* awards to further lake education efforts around the state. In addition, ambient and volunteer lake monitoring programs have been significantly expanded; four new staff have been hired to offer direct technical assistance to lake owners; hands-on lake workshops are offered on the shores of five to six lakes annually; and new lake education programs (i.e., *Lake Notes* fact sheets development, Project Wet funding, specialty workshops) are now being offered to the public. Since losing federal support in 1995 through USEPA's Federal Clean Lakes Program, Illinois is indeed fortunate to have one of only a handful of state-supported, comprehensive lake management programs in the entire country.

The quality of Lake Michigan is assessed separately from Illinois' inland lakes. The Great Lake forms the Northeastern portion of Illinois' border and serves as a center for recreation for many Illinois residents. As indicated by Figure 16, the quality of Lake Michigan has improved dramatically over the past twenty years. All 63 of the Lake Michigan shoreline miles within Illinois are now considered to be in "Good" condition.

Figure 16



Persons Served by Compliant Water Supplies

Safe drinking water should be free of contaminants that have the potential to cause either short term or long term health effects. Over 92% of persons served by Illinois community water supplies were compliant with all health standards (maximum contaminant levels, treatment techniques, or health advisories) during the calendar year of 1997. This is more than a three

percentage increase in compliance from calendar year 1996. Progress toward the Year 2000 goal is illustrated in Figure 17. The number of compliant water supplies during 1997 was 1592, or 88%, of the community water supplies in Illinois.

Figure 17

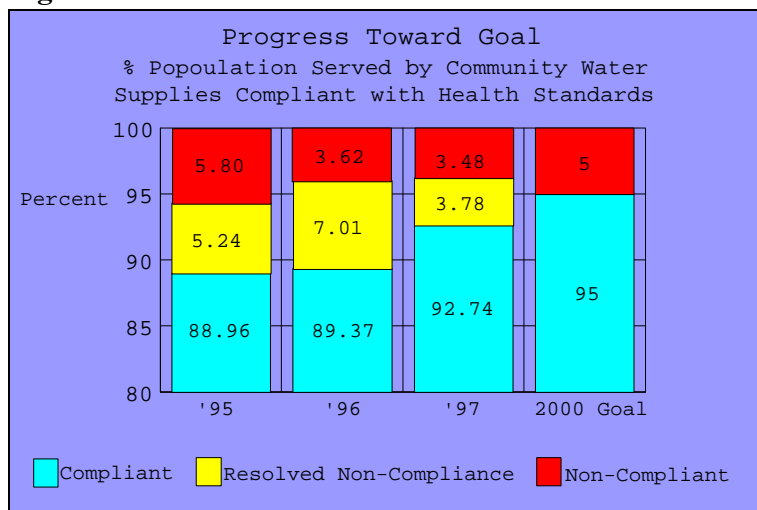
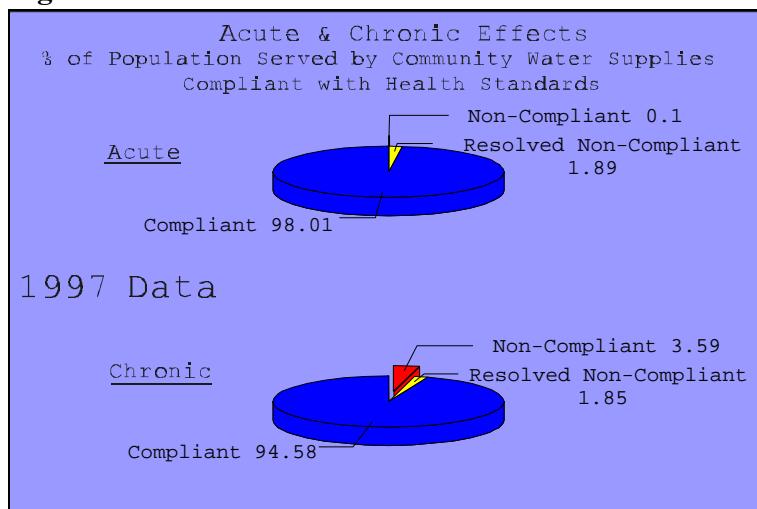


Figure 18 illustrates that over 98% of the population served by Illinois community water supplies received drinking water in compliance with acute (short-term) health standards, and over 94% was in compliance with chronic (long-term) health standards. It is important to note that most non-compliance was short in duration, and the potential for health risk was minimized through prompt corrective action by the water supplies. When compared to 1996 data, in 1997 improvements were made with approximately a two percent increase in compliance for chronic standards, and over a one percent increase in compliance for acute standards.

Figure 18



Lead Action Level

The Lead Action Level (15 parts per billion of lead) when exceeded in more than ten percent of the water samples collected in consumers homes, requires the water supply to implement a treatment technique or enforceable procedure which would prevent anticipated adverse health effects and insure that lead is controlled in the drinking water. In 1997, 1,717 water supplies, or approximately 95% of the water supplies were below the lead action level. These water supplies serve 96% of the population.

Groundwater Conditions

Sources of drinking water in Illinois are not limited to community-based water supplies. Nearly 36% of the state's population relies on groundwater for community drinking water supplies. Figure 19 illustrates a comparison of groundwater exceedences from data collected from Unconfined CWS Ambient Network Wells during 1993-1994, 1994-1995, and 1995-1996. The exceedences have been classified

into Good, Threatened, and Poor ratings to represent the conditions. The percentage of exceedences that were rated as Good decreased from 67% (61 wells) in 1994-1995 to 61% (57 wells) from samples collected during 1995-1996. In addition, the percentage of Threatened conditions increased from 24% (22 wells) to 31% (29 wells) during this same period. However, there was a 1% decrease (8.8 to 7.5% or 8 to 7 wells) in exceedences rated as Poor. The number of wells sampled increased slightly (two wells were added to the network to replace inactive wells during the 1994-1995 period) during the 1995-1996 period.

Targeted Monitoring Programs

As part of the development of a State Pesticide Management Plan for groundwater, the Illinois Department of Agriculture (IDOA) has installed dedicated monitoring wells to assess shallow groundwater pesticide impacts. The IDOA contracted with the Illinois Geological and Water Surveys to monitor 6 wells on a monthly basis. The well samples are analyzed for 14 pesticides including alachlor, acetochlor and atrazine. Preliminary results from 5 months of monitoring indicate low level detections during October 1997.

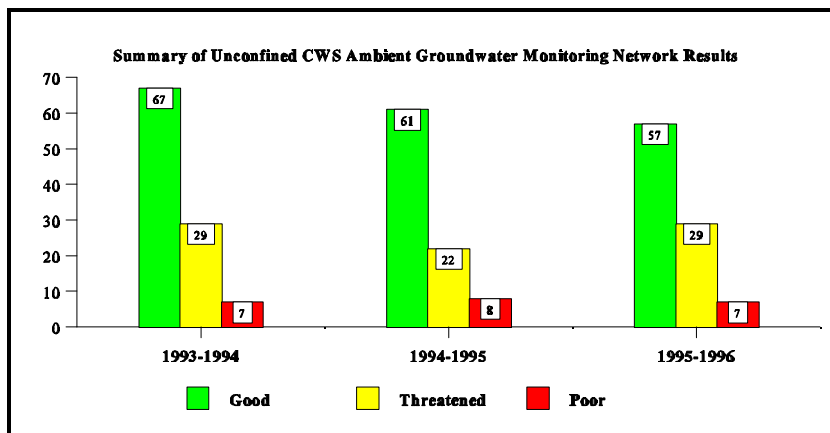
Unconfined CWS Ambient Groundwater Monitoring Network Results 1993-1996

Source Information
Groundwater monitoring results compiled by
Groundwater Section, Illinois EPA.

Scale
30 0 30 60 Miles

Legend

- ▲ Good (< Detection Limit)
- Threatened (=or> Detection Limit and < GW Standard)
- ◆ Poor (> GW Standard)
- State Boundary
- County Boundary



PROGRAM PERFORMANCE

PROGRAM OBJECTIVES

1. The percentage of non-compliant pollutant load discharged in the year 2000 will be less than 0.5% of the total permitted pollutant load discharged.
2. Watershed plans are reducing or eliminating identified use impairments.
3. 50% of the community water systems in the State with source water protection programs in place by 2005.
4. The percentage of groundwater recharge areas (acres) with protection programs established or under development will increase 15% between 1995 and the year 2005.

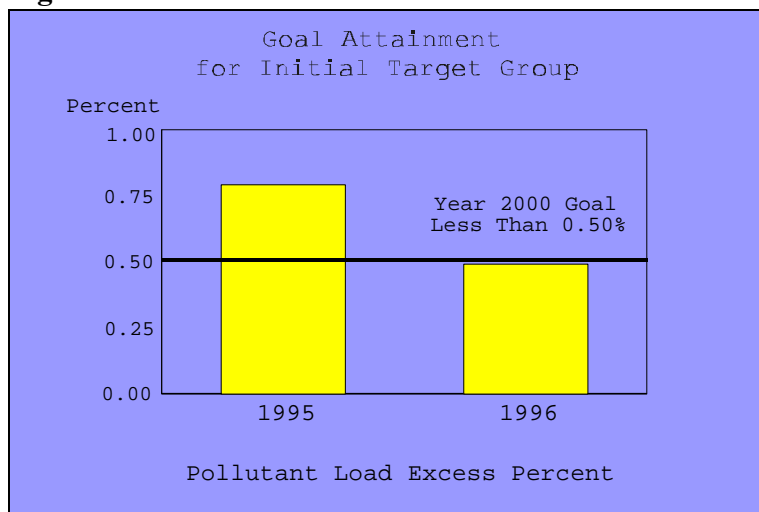
The program performance results follow the same sequence as was used for the watershed conditions section. The Agency's effort to track the level of progress for maintaining clean and safe water in Illinois is described below.

Excess Pollutant Load Discharged

Wastewater from industry or a municipality can contain different levels of dissolved or suspended matter. All wastewater discharged from industrial or municipal sources into Illinois waterways must meet certain limits on pollutant discharges. These limits are set to prevent violation of the receiving waters. Exceedences of these permit limits are an indication of

potential stress being placed on our water resources. Figure 20 illustrates the percentage of excess pollutant load discharged during 1995 and 1996 from 325 priority targeted facilities. As illustrated, the percent of excess pollutant load discharged by the priority targeted facilities during 1995 was 0.79% and the percent of excess pollutant load discharged during 1996 was 0.49%. In other words, the goal for the year 2000 of less than 0.5% was achieved for the initial group of

Figure 20



325 priority targeted facilities. By identifying critical watersheds and facilities with significant levels of noncompliant load, the Illinois EPA prioritized its efforts at eliminating the most significant impacts to our water resources. Achieving the goal in the first year of this targeted activity indicates that this prioritization effort is an effective tool for reducing excess pollutant loading. In view of this apparent success, the Illinois EPA expanded the target group from 325 to 747 facilities, and will continue efforts to further reduce excess (non-compliant) pollutant loads for this expanded group of priority facilities. The expanded group consists of all large (major) discharges (269) and small (minor) facilities of concern (478) within priority watersheds.

Figure 21 illustrates the percentage

of excess pollutant load discharged during 1997 from the expanded group of 747 priority facilities.

Figure 22 identifies that the excess during 1997 for the expanded target group was less than 0.5% for 432 facilities, greater than 0.5% but less than 10% for 138 facilities, and greater than 10% for 177 facilities.

Figure 23 provides an illustration of the percentage of excess pollutant load by watershed of excess

pollutant load which was discharged from the expanded target group of facilities in 1997.

Figure 21

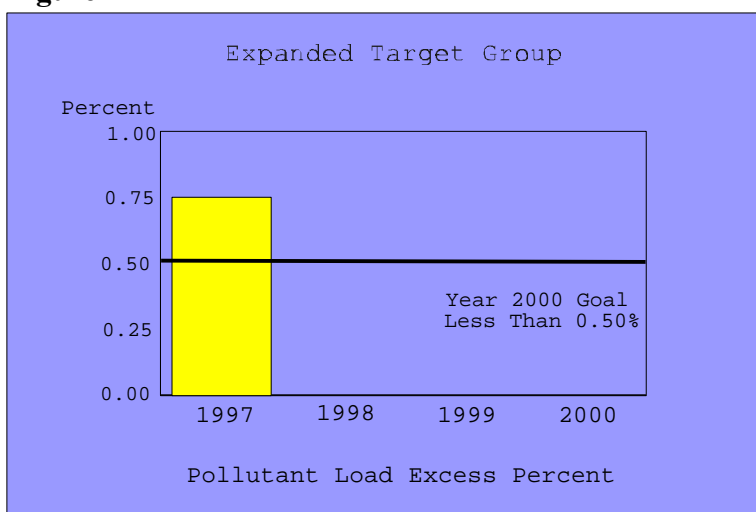
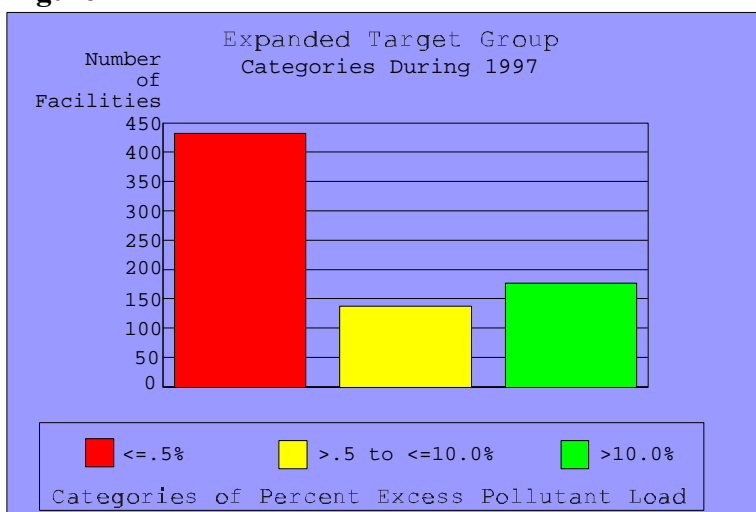
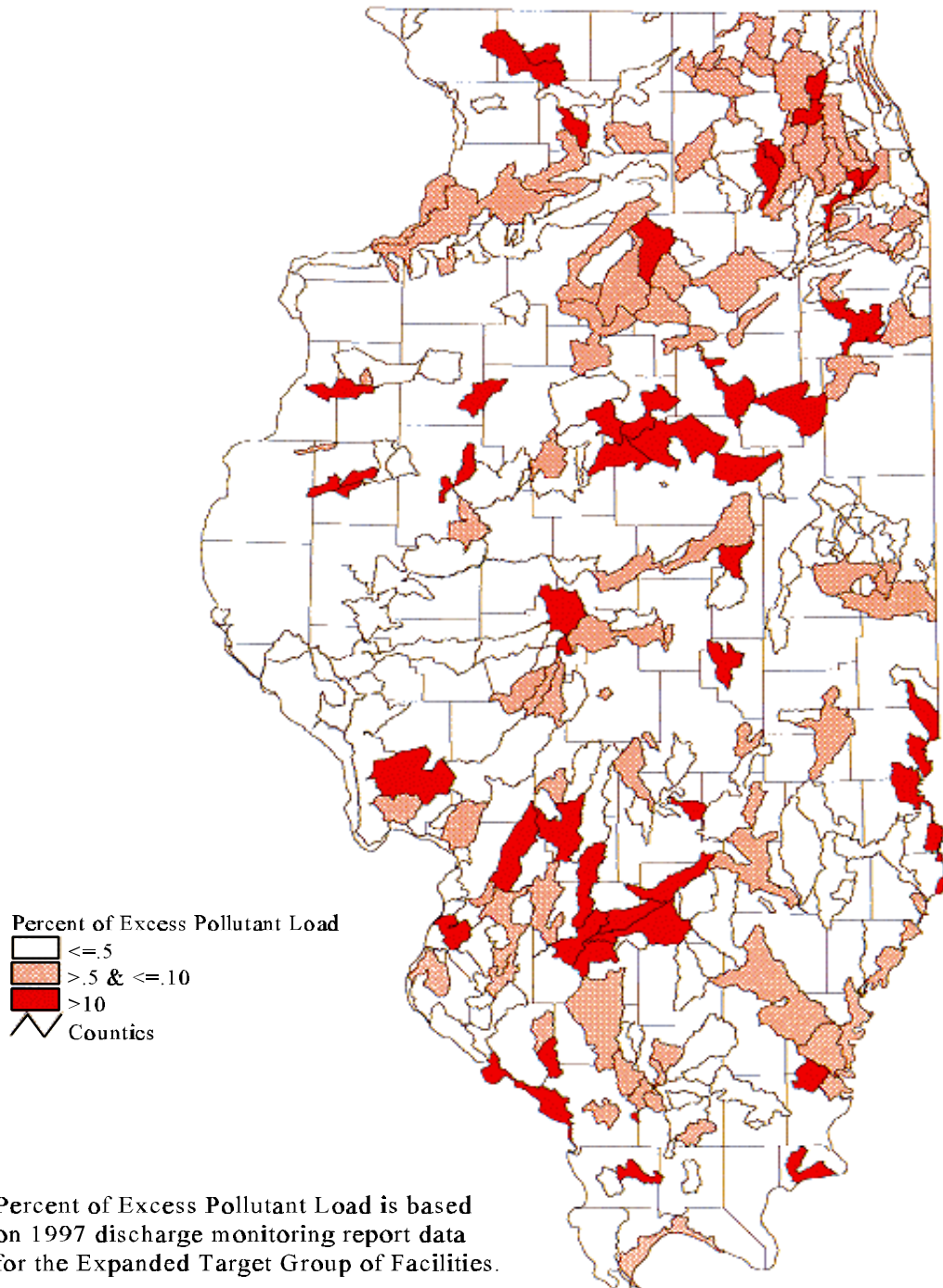


Figure 22



Conventional vs. Priority Pollutants

Further analysis of these exceedences shows that 99.79% of the excess pollutant loading relates to conventional pollutants and only 0.21% to priority pollutants (toxics).

Figure 23**Percent of Excess Pollutant Load by Watershed**

Watershed Plans

Watershed plans are reducing or eliminating identified use impairments: Data supporting the percentage of priority watersheds with implementable plans submitted and approved by the Agency is not yet available and will be part of the End of Year Watershed Status Report. The percent of watersheds with toxic pollutant loadings at or less than permitted limits will also be included as part of the End of Year Report.

Source Water Protection

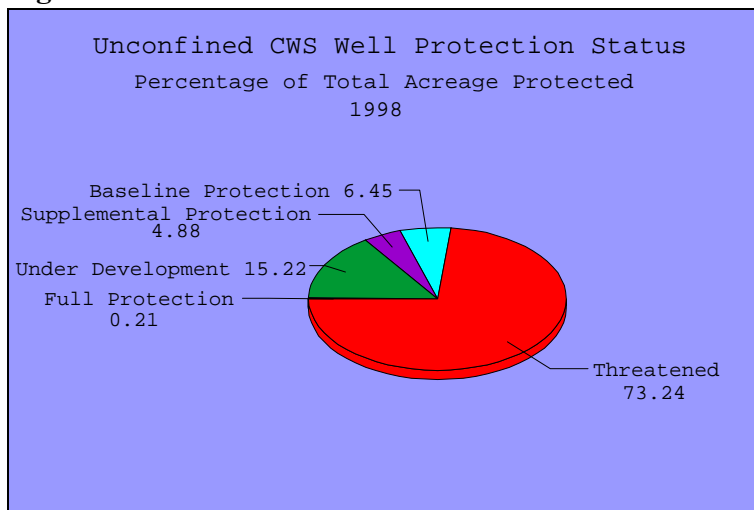
Addressing water quality at its' source is a preventative measure intended to deal with potential problems before they may occur. The Agency has developed a source water protection program which is being implemented over the next three years. The Bureau of Water is working to integrate source water protection under a watershed protection program. To date, 47 percent of the community water systems in Illinois are covered by full source water protection programs or have programs under development.

Groundwater Recharge Area Protection

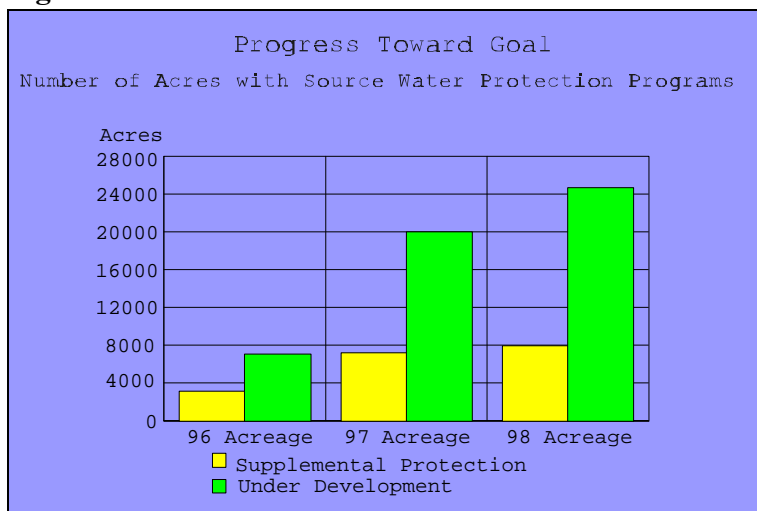
The costs of dealing with contamination can be very high. Therefore, protection of this valuable resource is especially critical. There are 2,995 active community water supply (CWS) wells using groundwater in Illinois. Approximately 2,110 are using aquifers that have natural geologic protection. These are referred to as confined aquifer system wells. Eight hundred and eighty-five wells are using unconfined aquifers. These 885 wells are highly vulnerable to contamination due to the geologic conditions, and the potential sources of contamination that surround them. One million one hundred and twenty nine thousand persons in Illinois rely on these unconfined aquifers for their source of drinking water. The majority of CWS systems in Illinois are considered small systems. Thus, the population represented may appear insignificant in relation to the overall population in Illinois. However, the systems that supply small populations are often more negatively impacted by contamination than those systems that supply larger populations. Unlike larger water supplies, small supplies may not have experts on staff to solve water quality problems or the rate base from which to draw funds for corrections (such as new source development or expensive water treatment systems). Therefore, protecting these smaller systems can be critical.

Protecting the land surface areas around those wells (recharge areas) can help prevent contamination of the groundwater. Measuring the percentage of these highly vulnerable areas that have been protected indicated how well Illinois groundwater is being protected. Baseline protection is associated with minimum setback zones to prevent contamination of the most vulnerable areas around the wellhead. Supplemental

protection represents maximum setback zone protection. And, full protection indicates that the recharge area has been fully delineated, the potential source(s) of groundwater contamination identified and groundwater protection management is being implemented or is under development.

Figure 24

The Illinois EPA has made significant progress toward achieving the 15% goal by increasing the number of source water protection programs that are under development. The percent of source water protection programs under development continues to increase from 4.81% in 1996 to 10.48% in 1997 to 15.22% in 1998 (7,250 to 20,000 to 24,680 acres protected). Figures 24 and 25 show the acreage with recharge area protection under development and the progress made during 1998.

Figure 25

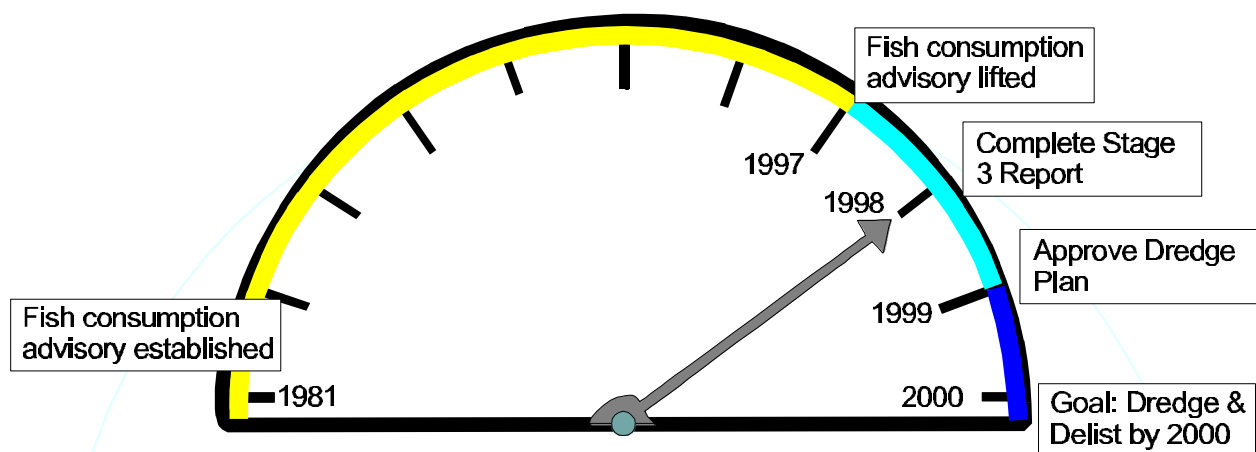
Additionally, the supplemental protection (maximum setback zones) increased from 1.89% in 1996 to 3.71% in 1997 to 4.88% in 1998 (3,100 to 7,200 to 7,920 acres protected), as illustrated in Figure 24.

Areas of Concern

Waukegan Harbor is Illinois' only Great Lakes "Areas of Concern" and is also a Superfund site. The harbor was contaminated with PCBs from years of industrial activity in the area. Harbor sediments were highly contaminated and bioaccumulation resulted in contamination of fish residing in the harbor. Special signs were placed warning the public not to consume fish taken

Figure 26

Waukegan Harbor Significant Accomplishments/Dates



from the harbor. Subsequent to a settlement of Superfund litigation, including a major cleanup commitment from the primary source of PCB contamination, over a million pounds of PCB contaminated sediments were dredged from the Harbor. A Citizens Advisory Group was formed and a Remedial Action Plan has been developed to restore the Harbor to full attainment of all uses. The Remedial Action Plan has been fully implemented. The project is now in a monitoring stage to document the adequacy of the clean up and elimination of any residual use impairment in preparation for formal delisting as an Area of Concern. In February 1997, the special public advisory against human consumption of fish taken from the harbor was lifted based on two years worth of post clean up monitoring data. Other monitoring programs continue as the Agency is developing both data and criteria for formal declassification as a Great Lakes Area of Concern. The Stage 3 report is to be completed by October 1998.

Waukegan Harbor

In early 1998 the U.S. Army Corps of Engineers (USACE) announced that they are developing a Comprehensive Dredging Management Plan (CDMP) for Waukegan Harbor. Major components of the plan are to remove any significant contaminated sediments remaining in the entire harbor (including a small portion outside the federal channel) and to deepen the harbor. Confinement of the dredge spoils would be accomplished in a confined disposal facility (CDF) either on land or at the lakeshore. The proposed USACE schedule calls for the construction phase to be underway by the year 2000. Final de-listing of Waukegan Harbor will depend on successful implementation of the dredging plan.

LAND QUALITY MANAGEMENT

GOALS

1. Safe Waste Management
 2. Reduce or control risk to human health and the environment from contaminated sites
-

SITE CONDITIONS

ENVIRONMENTAL OBJECTIVES

1. Groundwater at sites required to monitor shallow groundwater will be protected to meet the applicable groundwater standards.
2. Decreasing trend in significant releases to shallow groundwater at regulated non-LUST facilities over the next five years.
3. All injected contaminants are contained in the designated injection zone.
4. On an average annual basis, the acres of land where health risk is reduced or controlled is increasing.

Groundwater Monitoring and Assessment of Significant Releases to Groundwater at Regulated Facilities

The Illinois EPA evaluated the quality of groundwater at eleven waste management facilities in the Madison County/St. Clair County area (Groundwater Evaluation Pilot Study, 1996). The purpose of the study was to: (1) identify groundwater impacts; and (2) insure implementation of corrective actions when needed.

Based on the 1996 Groundwater Evaluation Pilot Study, Illinois EPA programs were determined to be effective in detecting groundwater impacts. Ten facilities were identified as having groundwater impacts as a direct result of waste activities conducted before Illinois EPA's regulatory programs began. Today, these facilities are performing corrective actions as currently required. This study is being expanded to evaluate groundwater quality in other areas in Illinois. Eventually, these methods and indicators will be used to screen the quality of groundwater statewide and to track the continued effectiveness of Illinois EPA's regulatory programs in protecting the groundwater resources of the State of Illinois.

Underground Injection Control

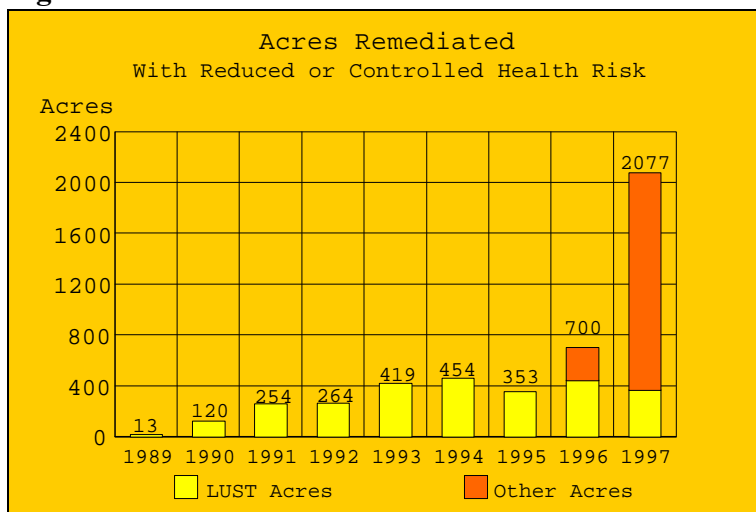
There are five Class I injection wells in Illinois where liquid hazardous and non-hazardous wastes are injected underground into deep, isolated rock formations. These wells are inspected to prevent them from contaminating drinking water resources. The inspections include sampling the waste and conducting an annual mechanical integrity test. The results of testing conducted in 1997 indicate all wells are operating in compliance with their permits and applicable regulations and that the injected waste is contained within the injection zone.

Sites Remediated

Activities at Leaking Underground Storage Tanks (“LUST”) sites in 1997 resulted in 366 acres where health risk was reduced or controlled. Activities at other contaminated sites in 1997 resulted in 1,711 acres where health risk was reduced or controlled. Not included in “other contaminated sites” total is the 16,935.5 acres at which health risk was reduced or controlled at U.S.

Department of Defense sites in Illinois (this acreage is also not reflected in Figure 27).

Figure 27



Overall, the health risk at contaminated sites was reduced or controlled at a total of 19,012 acres (or approximately 30 square miles) in 1997.

Since 1989, the Illinois EPA has made considerable progress in reducing or controlling significant health risk at contaminated sites. The total acres where health risk was reduced or controlled in 1997 increased 168% over acreage reported for 1996. Over 60% of the increase is due to completion of cleanups at three large voluntary cleanup sites. (Although the Illinois EPA has administered cleanup programs since 1984, non-LUST site acreage was not reported as a performance measure until 1996).

Illinois Brownfields Initiative

Brownfields are properties whose redevelopment potential is hindered by environmental conditions, either actual or perceived, and associated legal and financial liabilities. Brownfields are abandoned, unused, or underused industrial and commercial properties. The Illinois Brownfields Initiative is one of the premier industrial and economic redevelopment efforts in the country, offering an enhanced voluntary cleanup program and a standardized process for establishing cleanup objectives (i.e., Tiered Approach to Corrective Action Objectives, or "TACO"). As part of the Illinois Brownfields Initiative, the USEPA and Illinois EPA in 1995 signed the nation's first Superfund Memorandum of Agreement regarding federal Superfund enforcement at state voluntary cleanup sites. In July 1997, a similar agreement was reached between USEPA and Illinois EPA in regard to Resource Conservation and Recovery Act ("RCRA") enforcement at state sites using TACO. These agreements further encourage voluntary cleanups by assuring persons who complete voluntary cleanups that they do not have to worry about federal enforcement (with specific exemptions). Illinois EPA is also working with municipalities to create sustainable partnerships for the development of local-municipal-lead Brownfields programs.

PROGRAM PERFORMANCE

PROGRAM OBJECTIVES

1. Hazardous waste disposal in Illinois will continue to decrease over the next five years.
2. Reduction in volume of hazardous wastes containing the most persistent, bioaccumulative and toxic (PBT) constituents over time.
3. Collect solid waste disposal data from all facilities in Illinois required to report. *
4. Diversion of solid waste from disposal through the Household Hazardous Waste collection program, used tire recycling, and composting.
5. Identify and track all out-of-state solid waste received in Illinois.
6. Identify, investigate, and remediate (within a reasonable time frame) all reported open dump sites. This will be accomplished by both BOL and its delegated counties.
7. On an annual average basis, the median number of days required from the acceptance into voluntary Site Remediation Program to issuance of No Further Remediation or 4(y) letter is

decreasing. *

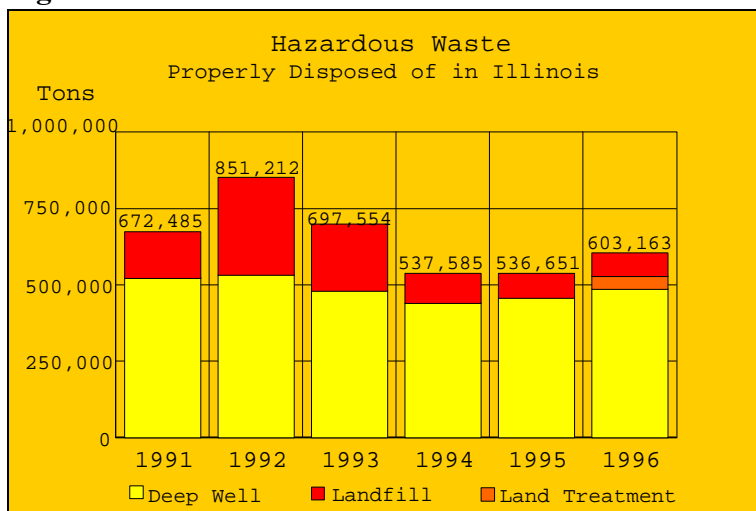
8. On an annual average basis, the percent of National Priorities List (NPL) or NPL-caliber sites where removal action has been initiated is increasing. *
9. On an average annual basis, the percent of NPL sites where remedial action has been initiated is increasing. *
10. On an average annual basis, the number of Leaking Underground Storage Tank (LUST) sites where health risk is reduced or controlled is increasing.
11. On an average annual basis, the cost of LUST cleanups (based on payments from the UST Fund) is decreasing.

* Reporting for these objectives are contained in the Annual Performance Report for Partnership Grant.

Hazardous Waste

Hazardous waste disposal occurs primarily at deep wells at Cabot Corporation in Tuscola, and at LTV Steel in Hennepin, and the commercial landfill at Peoria Disposal. As Figure 28 illustrates, the total amount of hazardous waste disposed in Illinois increased in 1996 from 1995 due to on-site land treatment that was used as part of the corrective actions conducted at the Marathon Oil facility in Robinson.

Figure 28



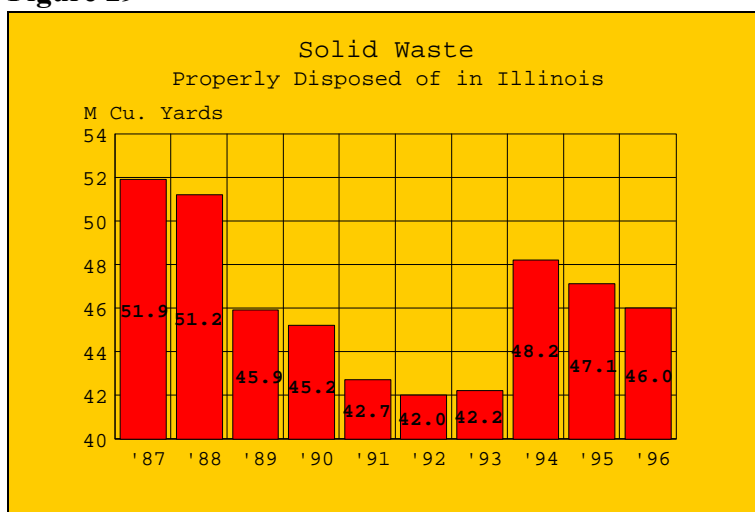
The Illinois EPA is working on the identification and reduction of the most Persistent, Bioaccumulative, and Toxic (PBT) hazardous constituents present in hazardous wastes. When more information becomes available, the Illinois EPA will develop a list of PBT constituents (i.e., mercury, lead, methoxychlor) to target pollution prevention and waste minimization activities at facilities that generate these hazardous wastes. Through reduction in waste generation and constituent concentrations, the Illinois EPA may be able to demonstrate a significant risk reduction to human health and the environment posed by these constituents. In addition, many PBT constituents are also known or probable endocrine disruptors, which further demonstrates progress toward protection of human health.

Municipal Solid Waste

The Illinois EPA collects and publishes information on the projected available disposal capacity in Illinois landfills. An annual report has been published for the past 10 years. The number of landfills permitted to accept municipal and non-hazardous special wastes declined from 146 in 1987, to 53 in 1997. The percentage of landfills that upgraded to meet the most stringent revised standards during this period increased to 96 percent. The number of permitted non-hazardous waste transfer stations increased from 61 in 1996 to 76 in 1997. This continues the trend towards fewer, but larger regional landfills and the development of a more efficient waste transportation infrastructure. The estimated remaining landfill capacity in 33 counties which have landfills has increased over the last eight years from 273 million cubic yards to 412 million cubic yards.

Since tracking began in 1987, solid wastes disposed of in Illinois landfills dropped from that peak years total of 51.9 million cubic yards, to a low of around 42 million yards during 1992 and 1993, then climbed to 46 million cubic yards in 1996. An additional 84,000 cubic yards were incinerated at the Chicago Northwest Incinerator which closed in June 1996 (Robbins Incinerator in suburban Chicago came on line in early 1997).

Figure 29

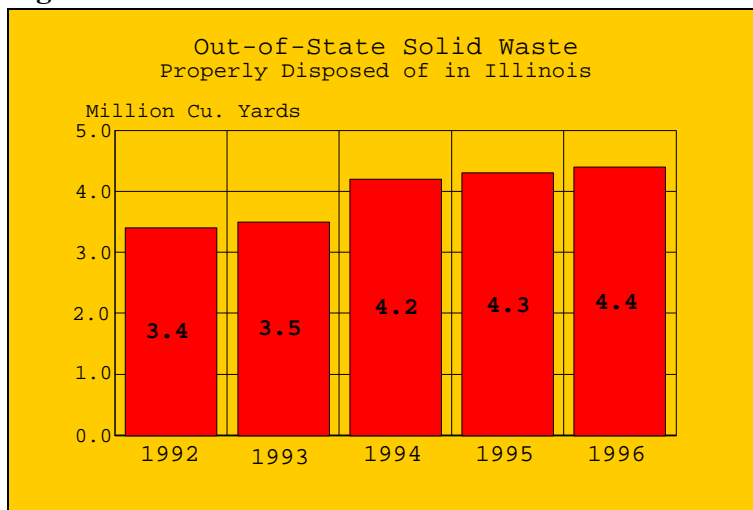


Solid Waste Plans

State law mandates each county and the City of Chicago to adopt and implement 20-year municipal waste plans. Every county but one has adopted a plan in accordance with the law, and are implementing their plans as financial resources permit. An additional fourteen counties adopted five-year plan updates in 1996. Local recycling goals are part of these adopted plans and plan updates.

Since 1992, owners/operators of Illinois landfills and incinerators report to the Illinois EPA the amount of out-of-state waste accepted each year. In 1996, out-of-state waste represented 4.4 million cubic yards, or 9% of the total amount of waste landfilled in Illinois. Therefore, 90% of the waste disposed of in the State's landfills is from in-state sources. Figure 30 indicates that the total amount of out-of-state waste

Figure 30



disposed of in Illinois has increased over the last five years. In 1996, the five adjacent states of Missouri, Iowa, Indiana, Wisconsin, and Kentucky contributed 4.2 million cubic yards or 95% of total waste imports. Missouri wastes landfilled in Illinois were more than 10 times the combined wastes received from Indiana and Wisconsin.

Materials Recovery

The Illinois EPA is able to track four main activities that recover materials from the waste stream: (1) household hazardous waste; (2) paint collections; (3) used tire cleanups; and (4) landscape waste composting. The Illinois EPA sponsors household hazardous waste collections and used tire cleanups. The quantity of household hazardous waste and paint collected around the state has generally increased over the last six years due to expanded publicity and an increase in the number of collections. Since the program began in 1989, collections have taken place in 73 counties in Illinois. The decrease in numbers of drums of household hazardous waste collected during 1997 (687 fewer) was due in part to budget restraints which restricted the number of collection events to 29; compared with 33 events the previous year. In addition to the one time collections, long term collection sites are located in Naperville and Rockford. These two locations are open each weekend to provide area residents with ongoing locations to take their household hazardous waste. Waste collected at the Illinois EPA household hazardous waste collections are recycled or disposed in a number of environmentally safe ways.

More than 100 drums of paint were collected for reuse and diverted from the waste stream through the Partners for Waste Paint Solution program. Under this program, the Illinois EPA partners with local paint retail stores to collect used and unwanted paint. Most of the paint is

mixed together and either sold or donated to community not-for-profit organizations. Any remaining waste paint is reused as an alternative fuel source.

The Illinois EPA has been conducting a used tire cleanup program for over 8 years. The Illinois EPA conducts approximately 100 cleanups annually, 25-30 of which are county-wide collections conducted at locations throughout the State. Local governments, County Farm Bureaus, and other local organizations can request that Illinois EPA conduct a collection in their county. The county-wide collections are provided free of charge and, combined with the other cleanups conducted throughout the State, have resulted in nearly 9 million used tires reclaimed over the life of the program. The tires that are collected are processed into tire-derived fuel for use as a supplement to coal in energy production. The number of tires

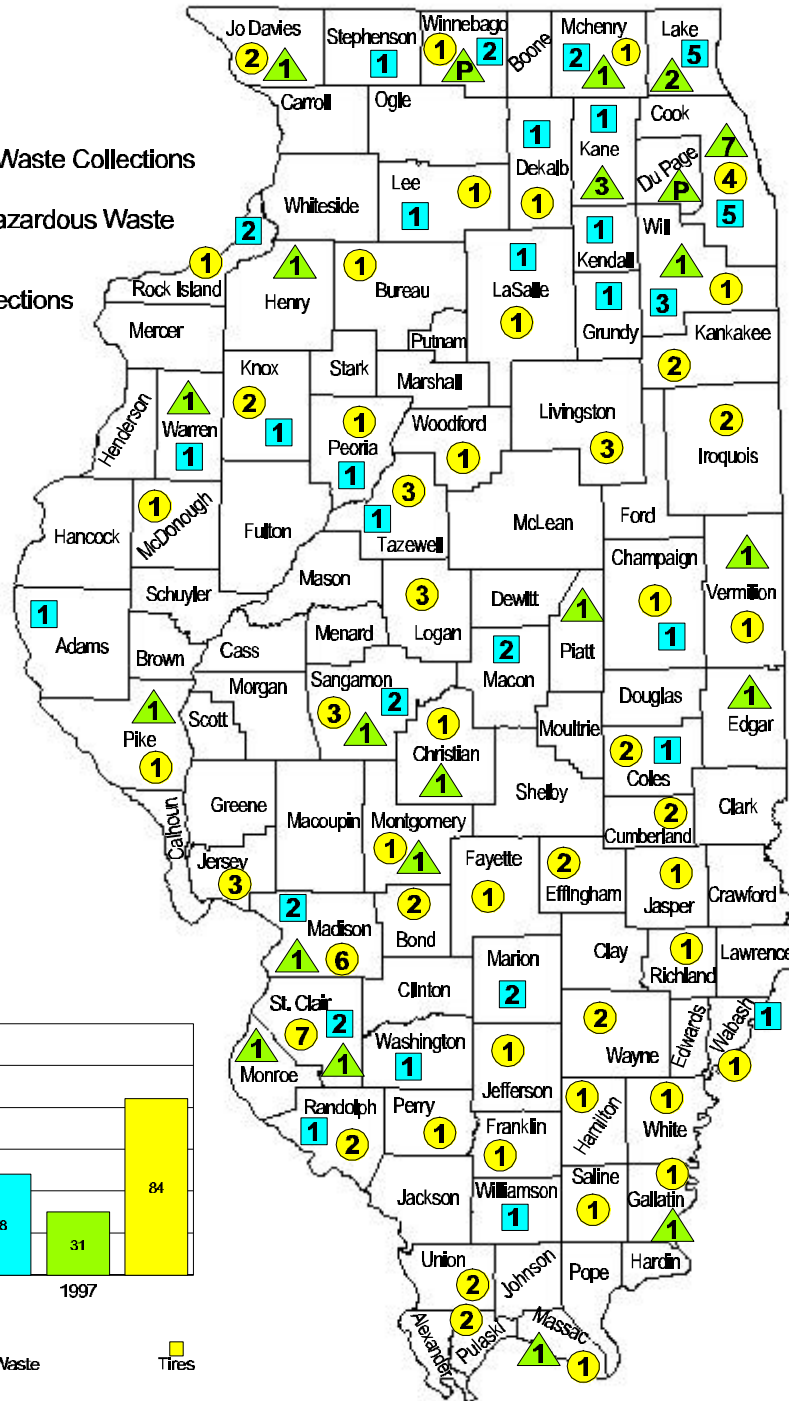
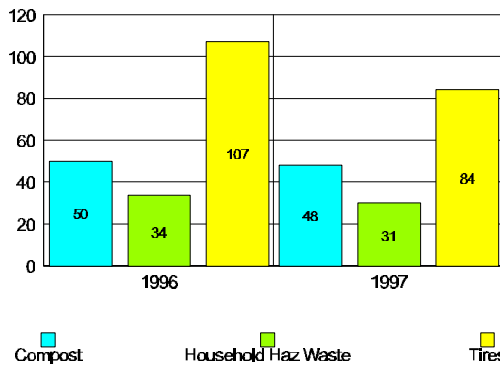
Hazardous Educational Waste Collection in Illinois

On August 11, 1995, the Governor signed into law Public Act 89-300 which authorized the Illinois EPA to develop a program for removing hazardous educational wastes from the state's public and private school laboratories and classrooms. Hazardous educational wastes include laboratory wastes, expired chemicals, unstable compounds and toxic or flammable materials. These wastes do not include wastes generated from maintaining school buildings, grounds or vehicles.

In the fall of 1996, the Agency developed a pilot project around its household hazardous waste collections to evaluate the costs and complexities of removing hazardous educational wastes from the state's schools. Schools closest to the Illinois EPA's household hazardous waste collection sites were invited to participate at the events. After the pilot project, the Illinois EPA decided to continue to collect hazardous educational wastes at all of the Illinois EPA's household hazardous waste collections. To date, enough hazardous wastes to fill one hundred and one, 55 gallon drums have been collected from 47 Illinois schools. With continued funding the Illinois EPA expects to continue this program at the current level. The Illinois EPA anticipates that about 20-30 schools will be invited to participate each year.

collected at state sponsored county-wide collections and cleanups of open dumps reached its peak in 1995 at 1.6 million tires. The drop in the number of tires collected since 1995 is due in part to the fact that many of the large tire dumps in Illinois have been found already and cleaned up. The program is now concentrating on finding smaller tire dump sites. This does not include the approximately 12 million tires that are properly disposed in the private markets. Most of the used tires collected are shredded and then used as supplemental fuel at power plants or industrial facilities. A small amount of the tires are used for stamped rubber parts or playground cover.

- 1 # Compost Facilities
- 1 # Household Hazardous Waste Collections
- P Permanent Household Hazardous Waste Facility
- 1 # Tire Cleanups and Collections



In addition, permits are issued by the Illinois EPA to facilities that collect and compost landscape waste. The quantity of landscape waste collected in the state reached its highest level in 1993 and declined slightly since then. In 1996, the volume of landscape waste collected was enough to cover 773 acres one foot deep. Some of the decline was due to more backyard composting and leaving grass clippings on the lawn. Also, more of the landscape waste has been sent to farms around the state. The landscape material collected at compost facilities is composted and used for landscaping, landfill cover, and land reclamation.

Industrial Material Exchange Service

The Industrial Material Exchange Service (IMES) was established in 1981 as an information clearing-house, directory and marketing facilitator for industry's reusable material. Those materials may include: waste by-products, off-spec items, hazardous and nonhazardous materials, overstock, damaged items or simply unwanted materials, all potentially usable to someone else. IMES helps industry manage their solid and/or hazardous waste in an environmentally safe manner. Since 1981, more than 314 million gallons or gallon equivalents of materials have been diverted from landfills with a cost savings of around \$120 million. Figure 32 charts the amount of materials transferred through IMES and the annual cost savings attributed to those transfers. Figure 33 tracks the number of transfers per listing each year. Over the last ten years, the number of successful transfers per listing in IMES has been increasing indicating that participants in the program are gaining experience and that a greater amount of the excess material listed with IMES is being utilized by other companies.

Figure 32

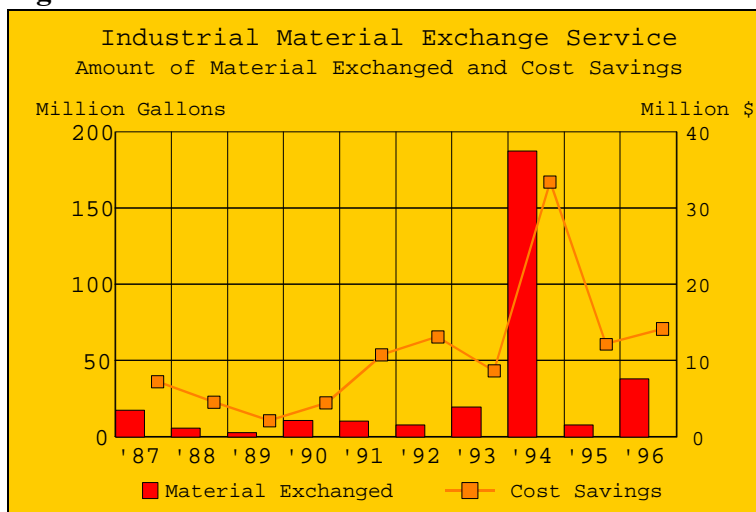
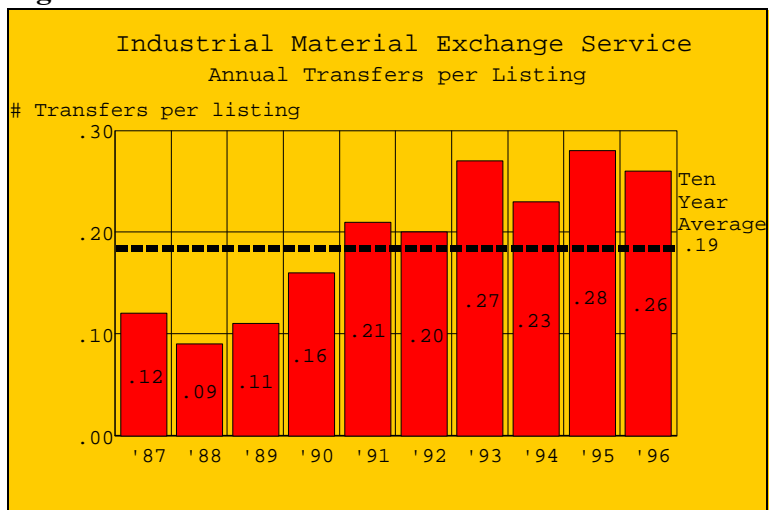


Figure 33

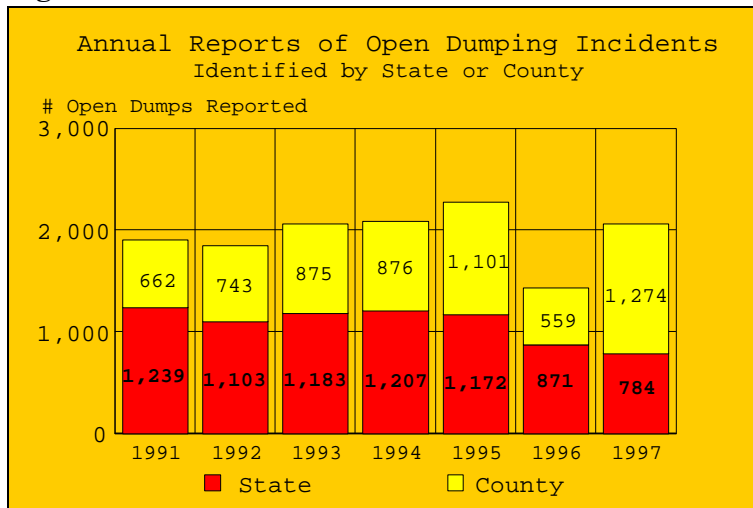


Open Dumping

In 1997, the Illinois EPA and local environmental partners received more than 2000 open dumping complaints. The Illinois EPA and local partners performed inspections at 1261 open dump sites. Our collective compliance and enforcement efforts resulted in the removal of approximately 220,000 cubic yards of waste from these sites to appropriate waste management facilities. In

addition, 750 open dump sites were cleaned up in 1997 as a result of these efforts. In future reports, the Illinois EPA will present data on the percent of the open dump universe remediated (cleaned up) using the open dumps initially inspected in 1997 as a baseline for this measure.

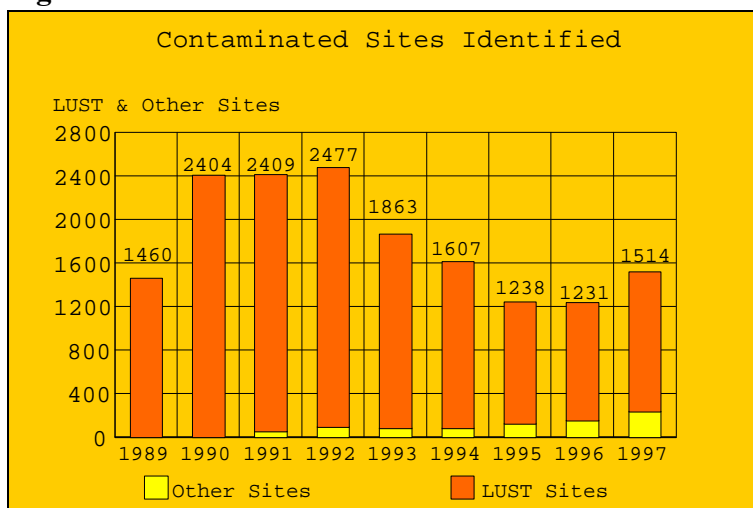
Figure 34



Local Environmental Partners

The Illinois EPA has partnered with 18 counties and the City of Chicago to inspect Illinois EPA permitted landfills, transfer stations, and compost sites. Formal agreements are used to delegate authority and authorize these local governments to find unpermitted landfills and investigate citizen solid waste complaints. In 1997, over 60% of open dumping incidents were handled by our local environmental partners.

Figure 35



Contaminated Sites

Restoration of contaminated properties depends on systematic site identification, investigation, and cleanup. These activities are administered by the Illinois EPA within six site categories: (1) LUST sites; (2) Federal Superfund or National Priorities

List (“NPL”) sites; (3) response action sites; (4) site remediation program sites; (5) federal facility sites; and (6) RCRA sites.

LUST sites are properties where petroleum or chemical products have leaked from buried tanks. Illinois EPA administers the investigation and cleanup requirements for tank releases. Identification of new LUST sites peaked in 1992 (2,477) and has declined over the past five years with 1,279 LUST sites reported in 1997.

Superfund or NPL sites are those properties requiring coordinated cleanup efforts between federal and state authorities. These sites include uncontrolled and abandoned hazardous waste sites as well as accidents, spills, and other emergency releases of pollutants and contaminants into the environment. In 1997, there were 43 NPL sites in Illinois. Removal action (e.g., removing tanks or drums of hazardous substances) has been initiated at 72 percent of these sites and remedial action (i.e., the implementation of the cleanup process) started at 56 percent of these sites.

State response action sites are properties where the Illinois Hazardous Waste Fund can be used to finance cleanup actions performed by Illinois EPA. Such sites are generally discovered by the Illinois EPA through: (1) citizen complaints; (2) notification of a release as required by permit or regulation; and (3) inventory efforts or random or incidental observations by government agencies. During 1997, the Fund was used by the Illinois EPA to finance the investigation and/or cleanup of nine sites, while 48 state response actions sites used private funds for investigations and cleanups.

Response Action Site - A Case History: Logan Landfill

The 22-acre Logan Landfill is located approximately 3 miles south of Lincoln, Illinois. This landfill received municipal waste from 1968 until 1992, when it was abandoned.

After the property was abandoned, conditions rapidly deteriorated and waste was exposed on the land surface. As the landfill settled, pools of water collected and seeped through the buried waste. Water, contaminated with hazardous substances, flowed from the landfill to Salt Creek and flammable gases escaped from waste. These releases presented a health risk.

In 1997, the Illinois EPA installed an engineered cap and gas venting system. The site no longer presents a source of pollution into Salt Creek or health risk.

Since 1995, the Illinois EPA has encouraged voluntary cleanups through the site remediation

program. Sites enrolled in this Program are eligible to receive a release of responsibility for further cleanup activities through a No Further Remediation (“NFR”) Letter or 4(y) Letter. Over the past few years, the site remediation program has seen rapid growth in the number of sites enrolled and number of sites cleaned up. Coupled with TACO, new incentives are being developed at the Federal, State and local level to encourage voluntary cleanups of Brownfields. Such incentives include the Environmental Remediation Tax Credit, Brownfields Tax Incentive, Cook County Property Tax Incentive for Brownfields Redevelopment, Federal Brownfield grants, Dry Cleaners Fund, and State Brownfield Grants for Municipalities. Site remediation program sites represented the greatest number of non-LUST contaminated sites identified in 1997.

Federal facility sites are those properties requiring cleanups by the U.S. government due to past spills or hazardous waste disposal practices. The Illinois EPA provides guidance and oversight to the federal agencies responsible for conducting cleanup and assurance to local communities that sites have been satisfactorily cleaned up. The universe of federal facilities includes sites ranging from abandoned mines and artillery ranges in remote locations to major weapons production facilities adjacent to urban areas. The size of these sites varies from less than 5 acres to more than 40,000 acres in Illinois.

U.S. Department of Defense Site - A Case History: Joliet Army Ammunition Plant

The productive reuse of Federal facilities is the primary goal of the remediation efforts of any base closure or surplus action. As an example of this, the 23,600 acres of the former Joliet Army Ammunition Plant (JAAP) have been or are being transformed into the 19,000 acre Midewin National Tallgrass Prairie, a 910 acre National Cemetery, a 425 acre landfill for Will County, and two industrial parks totaling 3,000 acres (1,900 and 1,100 acres respectively). In its former life, the JAAP manufactured the high explosives that were used in World War II, Korea, and Vietnam. The transformation of JAAP is a real world example of beating swords into plowshares.

RCRA sites are those properties permitted to treat, store or dispose hazardous waste or are required to close areas where they managed hazardous waste. Due to a variety of reasons, hazardous waste treatment, storage, and disposal facilities were first granted an interim permit before they were issued a final permit. Many of the facilities which were granted interim permits determined they did not need to obtain final permits or they illegally managed hazardous waste, and thus they had to clean up (or “close”) the units where they had initially treated, stored, or disposed of hazardous waste. In addition, facilities operating under final permits are required to

cleanup any spills or leaks on their property. In 1997, closure was completed at 16 RCRA sites in Illinois and 39 RCRA sites underwent corrective action.

RCRA Site - A Case History: Xerox

The closure of hazardous waste management units at the former Xerox facilities, a high-priority site, in Oak Brook, Illinois is an example of what can happen when a cooperative work relationship is developed between involved parties. The project was able to proceed in a timely manner, and ultimately to achieve final site cleanup objectives.

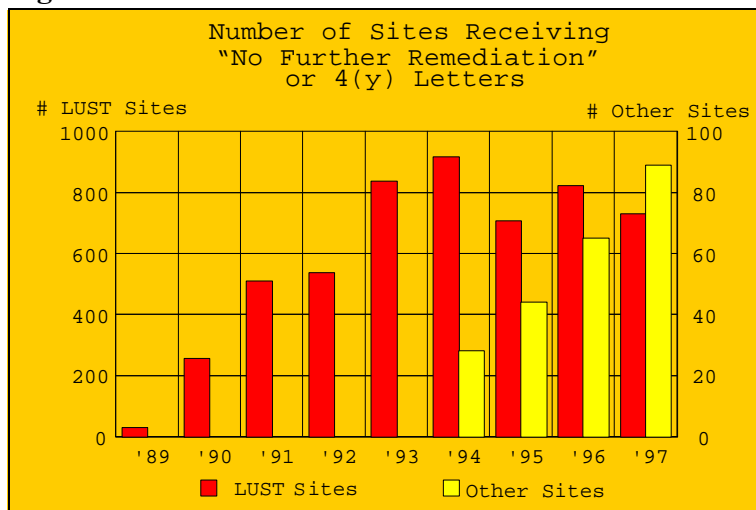
The development and implementation of the Oak Brook closure strategy was based on the results achieved through aggressive application of 2-PHASE Extraction (an in-situ cleanup technology) to soils contaminated by solvents, followed by an accelerated source area excavation program that resulted in the successful transfer of both properties. The closure occurred years ahead of the original schedule, allowing Xerox to take full advantage of the business opportunity created by the real estate property transfer(s) of both facilities.

The combined number of new NPL sites, state response action sites, site remediation program sites, federal facility sites, and RCRA sites added 275 contaminated sites in 1997.

Tiered Approach to Corrective Action Objectives

In 1997, the Tiered Approach to Corrective Action Objectives (“TACO”) became an acceptable method for developing risk-based cleanup numbers or options for contaminated sites in Illinois. Previously, a one-size fits-all approach was used to set cleanup standards at nearly every site. TACO allows actual site conditions and land use to develop risk-based and site-specific cleanup objectives. Use of this new approach is intended to reduce cleanup costs and return more sites to productive use. Working in cooperation with the existing laws and regulations, TACO provides considerable flexibility to site owners in developing site-specific solutions.

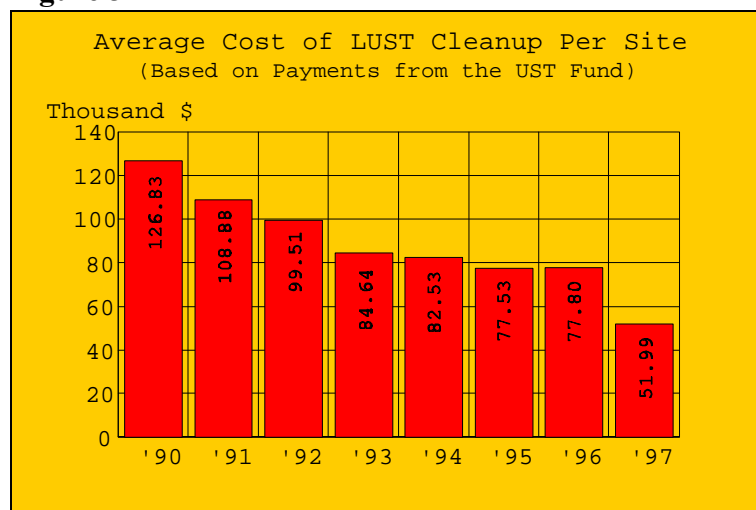
Figure 36 indicates the number of leaking underground storage tank (LUST) sites that received a No Further Remediation (NFR) letter each year from the Illinois EPA. A NFR letter indicates that the appropriate LUST cleanup objectives or site classification requirements have been met for that site. Between 1989 and 1997, a total of 5,346 LUST sites have received NFR letters. Since 1993, the Illinois EPA has issued at least 700 NFR letters annually, with over 900 letters issued in 1994. Additional funding via an environmental impact fee in 1996 has encouraged the owners and operators to proceed with cleanups that reduce or control health risks at LUST sites. The use of TACO should also help to increase the number of sites receiving NFR letters.

Figure 36

For those site remediation program sites receiving releases in 1996 and 1997, the median number of days that it took from the acceptance in the site remediation program to the issuance of a NFR or 4(y) letter was 115 in 1996 and 263 in 1997. Illinois EPA issued a total of 89 NFR letters and 4(y) letters in 1997.

Figure 37

As indicated in Figure 37, the cost of LUST cleanups has been decreasing for the last eight years. The peak for the average cost per site reimbursed occurred in 1990 (\$120,826). The lowest cost per site reimbursed occurred in 1997 (\$51,990). The decreasing cost trend, which is expected to continue, is likely influenced by the implementation of the statute and regulations for site classification in 1993 and 1994, respectively, as well as the use of TACO.



MULTIMEDIA MANAGEMENT

GOAL

**ENVIRONMENTAL
OBJECTIVES**

The multimedia programs do not have separate and distinct environmental goals and objectives. Instead, these programs work in concert with the major media programs towards achievement of the specified goals and objectives.

PROGRAM PERFORMANCE

**PROGRAM
OBJECTIVES**

1. Total toxic load on the environment will be steadily reduced towards zero adverse consequences.
2. Regulated facilities that timely file Form R reports will exceed 95 percent. *
3. The total number of reported emergency release incidents will decline over the next five years.
4. Majority of regulatory innovation projects undertaken will be fully or partially successful. *
5. More than 80 percent of our clients successfully complete the agreement process. *
6. The amount of pollution eliminated or reduced at the source increases each of the next five years.
7. Environmental awareness, knowledge and skills are increased for more youth and citizens over the next five years.

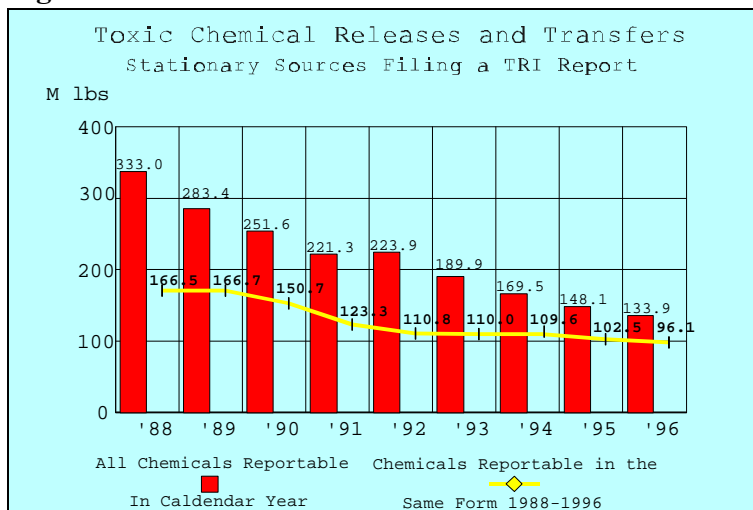
* Reporting for these objectives are contained in the Annual Performance Report for Partnership Grant.

Toxic Release Inventory

The release and transfer of toxic chemicals is tracked by the Illinois EPA. In 1997, 1,128 facilities filed reports for 193 different chemicals. This information is maintained in the Toxic Release Inventory (TRI). Even though the list of toxic chemicals is constantly changing, having nearly doubled in 1995, the amount of reported toxic chemicals released into the environment in Illinois has steadily

decreased from 1988 through the present. The annual totals may not match previous reports due to submission of voluntary revisions by facilities for previous years. The moving five-year decrease for all reportable chemicals in a calendar year approaches 40% through 1996.

Figure 38



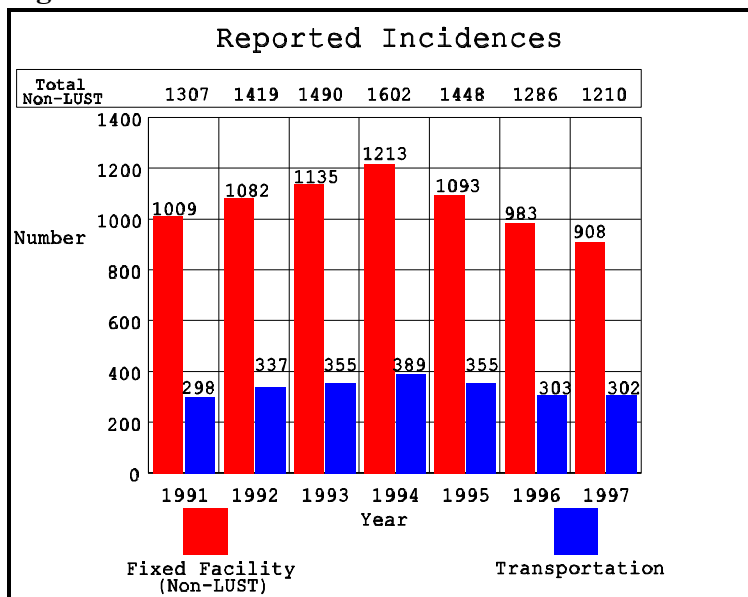
Changing List of Toxics

Seven new industrial categories will begin reporting for 1998, which may require a new baseline for analysis of long-term trends in toxic releases and transfers.

Emergency Incidents

While recognizing that each incident has many characteristics that contribute to how serious the consequences are, the total number of incidents reported provides the most general indication of the success of prevention efforts. Leaking underground storage tank (LUST) incidents have been subtracted from the totals as these incidents are addressed through the Bureau of Land's LUST Section and are reported in Figure

Figure 39



35 of this report. We have also provided a breakout for fixed facilities and transportation incidents so that relative trends can be tracked since the focus of preventive efforts differs for these two categorizations of incidents. Of the 908 fixed facility incidents 4.3% came from facilities that had reported an incident earlier in 1997.

Note: The number of reported incidents has been revised since the previous report. The individual that previously calculated this data has retired. We were unable to reproduce the data. A re-calculation of the old data provided the values shown in the figure above.

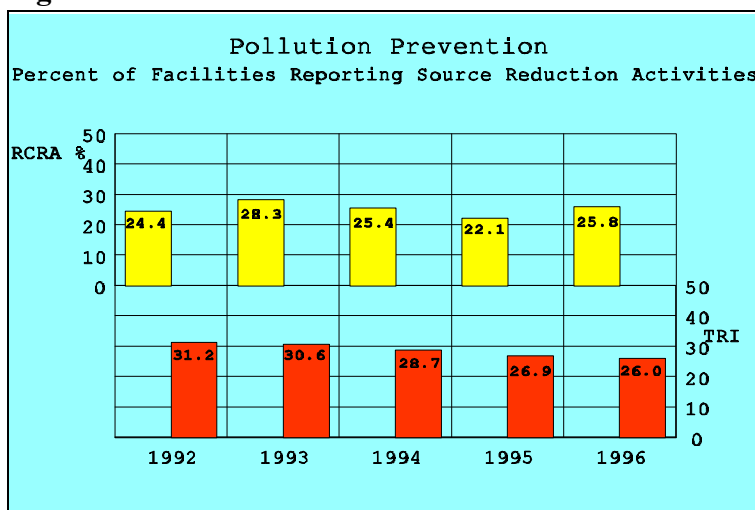
Significant Releases

The number of “significant releases” from fixed facilities has gone down in recent years. Under the Illinois Chemical Safety Act, hazardous chemical releases are considered to be significant if public fatalities, injuries/hospitalization or evacuations are involved or an on-site inspection is conducted due to the magnitude of the incident. From a peak of 14 incidents in 1991, only 2 incidents were designated as significant releases by the Illinois EPA in 1997. Injuries peaked at 707 in 1988, but none were reported for 1995, 1996, and 1997. There were approximately 3000 people evacuated due to significant releases during 1997. No fatalities have ever been reported.

Pollution Prevention

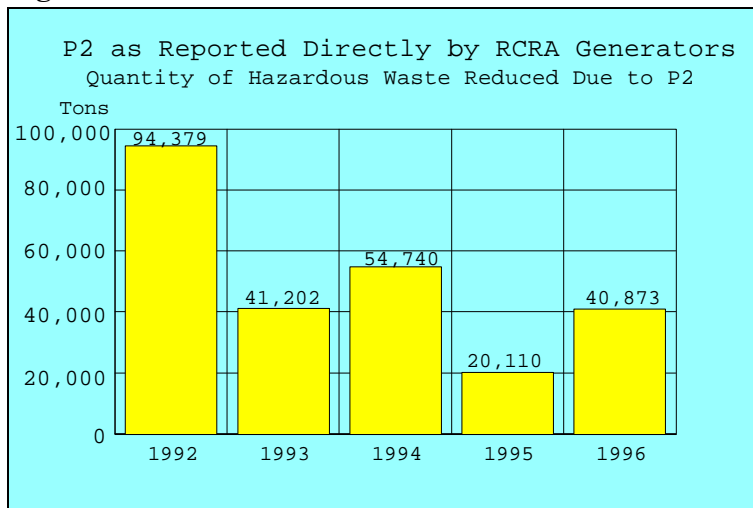
Illinois EPA has developed a number of voluntary programs to encourage industries and others to reduce or eliminate the generation of pollution and waste at the source. This is preferable to treating or managing pollution and waste after the fact. Currently, we are measuring the success of our efforts by assessing the percentage of new and expanded pollution prevention projects reported by Illinois industrial facilities that file annual toxic release inventory and hazardous waste generator reports (Figure 40) with the state. The Agency also evaluates the

Figure 40



amount of hazardous waste reduced by pollution prevention at facilities that file hazardous waste reports (Figure 41). While these measurement approaches have certain limitations, the data indicate that pollution prevention activity has flattened out over the last few years.

Figure 41



New Pollution Prevention Focus

Illinois EPA is committed to seeing the percentage of companies practicing pollution prevention increase over the next five years. The Agency believes that we can improve our performance by incorporating pollution prevention into routine regulatory functions and working in partnership with others to deliver technical assistance. Last year, the Office of Pollution Prevention and Quality Program provided pollution prevention training to over 180 field inspectors. Follow-up pollution prevention assistance projects that involve the field staff have commenced in the Chicago metropolitan area. Illinois EPA is also teaming up with the North Business and Industrial Council and Illinois Waste Management and Research Center to pilot compliance and pollution prevention assistance to targeted facilities in the City of Chicago. We believe these projects will help to more effectively integrate pollution prevention into the day-to-day activities of both our agency and the business community.

Environmental Education

Illinois EPA continues to be committed to proactively reaching out to the citizens of Illinois, particularly the youth, to increase understanding of environmental issues and programs, and to encourage individual responsibility for reducing air, water, and land pollution. In 1997, the first year of implementation, the Illinois EPA's Environmental Education Strategy was completed. Two key components of the strategy are: 1) development of a measurement tool to track the number of people who participate in environmental education experiences; and 2) development of suitable indicators and measures of environmental education program success.

In February 1997, a form to track the number of participants involved in Illinois EPA

environmental education events was finalized and distributed to all staff. Data compiled from these forms was subdivided into three general categories: 1) direct interaction with individuals, such as the Governor's Environmental Corps, 2) group interactions, such as contacts at Earth Stewardship Day, and 3) mass interactions, such as the Illinois EPA's exhibit at the Brookfield Zoo. Information regarding the number of people involved in the above categories is included in the appendix.

In order to determine if the environmental education goal is being met, it was decided that the use of a pre-survey and post-survey at selected environmental education events would be the best measurement tool to assess

whether the participants have an

increased understanding of specific issues following an event. The focus of the pilot measurement efforts was on the following 1997 events: Earth Stewardship Day, the GEC Summer Internship Program, and one exhibit/activity at the State Fair tent in Conservation World. Three targeted audiences would be covered by these aforementioned events: children (Earth Stewardship Day), high school/college students (GEC Summer Internship Program), and general public (State Fair tent). Post-survey results for two of the programs (Earth Stewardship Day and the GEC Summer Internship Program) indicated an increase of knowledge following participation in the program. The survey for the State Fair exhibit was poorly designed, due to several factors (resulting in data that was not useful). In the future the Environmental Education Coordinator

Figure 42

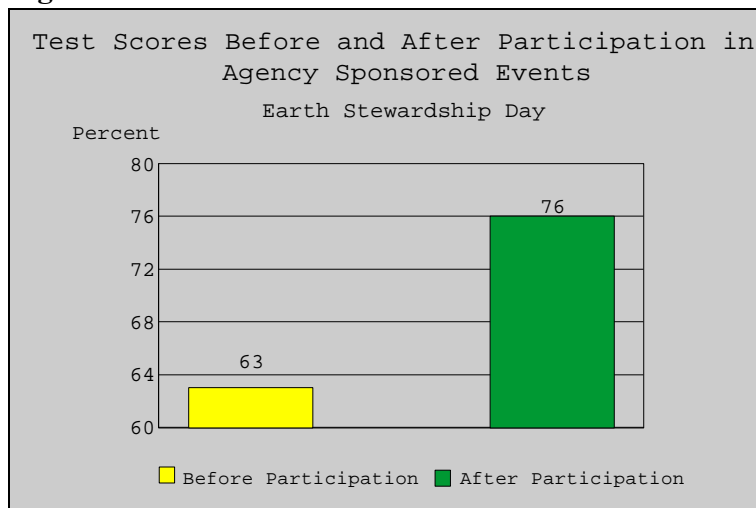
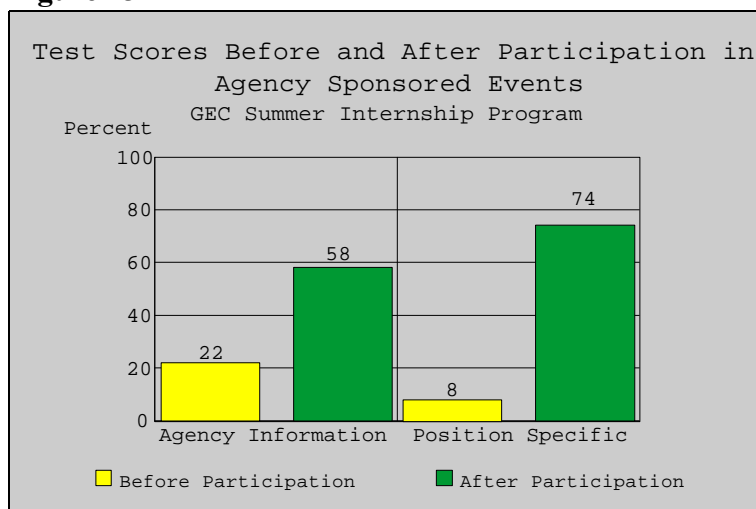


Figure 43



will work closer with the State Fair Committee to insure a quality product. The results of these surveys are listed in Figures 42 and 43. In 1998, the Illinois EPA will continue to refine suitable environmental indicator(s) and core performance measure(s) for the environmental education programs. Different approaches will be tried out on a pilot basis in conjunction with various educational events.

Governor s Environmental Corps

The Governor's Environmental Corps (GEC) is a nine-week "hands-on" summer internship program consisting of 39 college students from around the state. GEC interns work closely with Illinois EPA "mentors" in areas ranging from field inspection to agency administration. Every other week, the interns participate in field trips to various industrial and municipal facilities. These field trips are preceded by half day learning modules, during which the students are given an overview of the Illinois EPA's regulatory role and background information on the facilities. In addition, several of the GEC interns have the opportunity to interact and educate younger students about environmental leadership as part of the Governor's Junior Environmental Corps. The GEC program is funded through a government and industry partnership effort.

APPENDIX A

MASTER LIST FOR REFERENCE MATERIALS

AIR QUALITY MANAGEMENT

1. 1995 Illinois Annual Air Quality Report (June, 1996)
2. 1996 Illinois Annual Air Quality Report: Draft (June, 1997)
3. 1996 Compliance Report, EPA 430-R-97-025 (June, 1997)

WATER QUALITY MANAGEMENT

1. Illinois Water Quality Report 1994-1995, Volumes I and II (September, 1996)
2. The Condition of Illinois Water Resources 1972-1996 (December, 1996)
3. 1994 Illinois EPA Bureau of Water Volunteer Lake Monitoring Program Report (November, 1995)
4. 1996 Illinois EPA Bureau of Water Volunteer Lake Monitoring Program Report (September, 1997)
5. Lake Michigan Water Quality Report 1989-1991 (June, 1993)
6. Illinois Quarterly Safe Drinking Water Information System Reports, 1995 (May, 1995; August, 1995; November, 1995; February, 1996)
7. Illinois Groundwater Protection Program Biennial Comprehensive Status & Self-Assessment Report (January, 1998)
8. Illinois Quarterly Non-Compliance Reports for NPDES Dischargers, 1995 (June, 1995; September, 1995; December, 1995; March 1996)

LAND QUALITY MANAGEMENT

1. Available Disposal Capacity for Solid Waste in Illinois, Ninth Annual Report (December, 1996)
 - Includes composting information
2. Summary of Annual Reports on Hazardous Waste in Illinois (1994)
 - Current data is used for this report, but is not yet available in a separate published report
3. Leaking Underground Storage Tank Program, 1997 Annual Report
4. Groundwater Evaluation System Pilot Study Compendium, Ambient Groundwater Quality in the American Bottoms Area, Bureau of Land Permit Section (April, 1997)
5. Household Hazardous Waste Collection Results: 1994 - 1995 (July, 1995)
 - Current data is used for this report, but is not yet available in a separate published report
6. The Value of Strategic Planning and Technology: A Case Study of Remediation Management to Accelerate Closure (Webster, New York: Xerox Corporation, 1998)
7. Tiered Approach to Corrective Action Objectives (TACO), Fact Sheet Series (November, 1997)

MULTIMEDIA MANAGEMENT

1. Ninth Annual Toxic Chemical Report (August, 1997)
2. Office of Chemical Safety Annual Report (April, 1998)
3. Campaign for Brookfield Zoo, Chicago Zoological Society (1995)
4. Shedd Aquarium brochure (June, 1995)

APPENDIX B

AIR QUALITY MANAGEMENT

1. Pollutant Standards Index

The pollutant standards index is calculated using monitoring data for the four criteria pollutants, plus nitrogen dioxide. The levels of the five pollutants are combined in a way that results in a single index number. Based on the index number, the air quality in a given area at a certain time can be described. The index number ranges and the corresponding air quality categories are as follows:

If the Index Number is:	The air quality is:
0-50	Good
51-100	Moderate
101-199	Unhealthful
200-299	Very Unhealthful
300 and above	Hazardous

The percentage of time that an area's air qualifies as good or moderate can aid in understanding whether or not an individual needs to worry about the health effects of the air in his local area. The air quality index also allows tracking of general air quality over time to determine if air in an area is getting better or worse. The Bureau of Air maintains records on the air quality index from 8 sectors in the state considered to be major metropolitan areas.

2. Ozone Problem

Ozone is the only criteria pollutant for which Illinois is not in attainment. Ozone is a pollutant formed by chemical reactions of emissions of VOM and NO_x in ozone-conducive weather conditions. In the Midwest, when it is very hot, humid, and sunny and the wind is stagnant, conditions are ripe for the formation of ozone. Tracking emissions of VOM and NO_x during the ozone season, as well as monitoring actual ozone levels, indicates the status of ozone air quality in the nonattainment areas.

The Chicago and Metro East/St. Louis areas have exceeded the federal ozone standards and have been officially listed as being in "nonattainment" for ozone. The indicator that monitors ozone levels is used to determine whether or not the ozone nonattainment areas in the state are making progress toward attainment with the national standard. The Illinois EPA maintains a network of air monitors that test the air for ozone.

3. VOM & NOx Emissions

a) VOM Emissions

Volatile organic materials (VOM) are involved in the creation of ground level ozone. VOM is emitted through many means, including vehicle exhaust, the use of paints and solvents, and industrial processes. Illinois EPA tracks and maintains an inventory of VOM emissions.

VOM emissions data are available through the annual emissions reports filed with the Illinois EPA and through calculations and/or modeling performed using census data to derive VOM emissions from area and mobile sources.

The VOM emissions estimates for stationary sources are from the facility-reported emissions for the years 1992 through 1996. The emissions from area and mobile sources have been determined from the Illinois EPA's estimates of activity data and vehicle miles traveled (VMT). The mobile source component includes both on-road and off-road usage.

b) NOx Emissions

Emissions of nitrogen oxides (NOx), like VOM, are involved in the formation of ozone and, to a lesser degree, in the formation of acid rain. NOx is emitted primarily as a by-product of combustion. Power production, industrial processes, and automobile exhaust are examples of NOx sources.

Illinois is one of 23 jurisdictions that are the subject of a proposed notice of deficiency in the state implementation plan (SIP) for contributing to transported ozone. The Ozone Transport Assessment Group (OTAG) studied transported ozone for two years and determined that regional reductions of NOx emissions would most efficiently reduce transported ozone. The Illinois EPA is currently responding to the proposed SIP call and conducting subregional modeling to determine the levels of NOx reductions outside the nonattainment areas that are necessary, in conjunction with local reductions of VOM emissions, to bring the nonattainment areas into attainment.

4. SO₂ Emissions

Sulfur dioxide (SO₂) is a major component in the formation of acid rain. The primary sources of SO₂ emissions are coal burning power plants. The Clean Air Act (1990) mandates a reduction in nationwide SO₂ emissions. Tracking statewide SO₂ emissions indicates whether the state is on track to meet federal goals. This environmental conditions report shows data through 1995.

The Acid Rain Program established by the Clean Air Act (1990) required Phase I units to install continuous emissions monitoring systems (CEMS), pass a series of CEM performance tests, and submit a year's worth of emissions data in 1994, the start-up year of the program. In 1995, these same requirements affected Phase II units. Illinois has 17 Phase I units which began monitoring emissions by the deadline of November 15, 1993, and submitted CEM certification test results by December 15, 1993. The table depicting SO₂ emissions in this report reflects U.S. EPA's method of combining the reductions of both Phase I and Phase II, as so many sources opted for early reductions, resulting in only a

marginal difference between the two Phases. Although actual emissions of SO₂ have increased, all units in Illinois held allowances in the Acid Rain Trading Program sufficient to cover the additional emissions.

5. HAP Emissions

Progress in lowering emissions of airborne hazardous air pollutants (HAP) is tracked by using an indicator based on the toxic release emission reports of facilities emitting these pollutants. A HAP is any of the approximately 189 substances listed as a HAP in the Clean Air Act (1990). Sources that emit more than a given amount of these substances must file a report with the Illinois EPA and these reports are entered into the toxic release inventory (TRI).

Whether a certain pollutant is hazardous or not is probably its most important characteristic. Tracking the emission levels of identified HAPs and determining increases or decreases statewide is a good indicator of the air program's effectiveness pertaining to hazardous air pollutants. Information for calendar years 1988-1996 is available.

WATER QUALITY MANAGEMENT

1. Waterways

The rivers and streams (waterways) in Illinois have been classified as either good, fair, or poor. This classification uses chemical, physical, and biological data as well as information from land use activities for an assessment of whether a water body can support activities for which it could be used. Specifically, the assessment combines several indices which measure how well that water body can support aquatic life. "Good" indicates that it can fully support aquatic life, "Fair" indicates partial support, and "Poor" indicates that it can not support aquatic life. For rivers and streams, an assessment of how well a particular waterbody can support aquatic life is considered the single best indicator of overall stream conditions.

The Bureau of Water assesses rivers and streams on the two-year 305(b) report cycle. This 1996 Annual Environmental Conditions Report uses data from the most recently completed 305(b) report which presented data from 1996. 33% of the total stream miles in Illinois were assessed for that report.

As part of the 305(b) assessment of use support within Illinois waterways, the Illinois EPA differentiates and reports the number of stream miles with use impairments from point sources only, nonpoint sources only, and from both point and nonpoint sources. The number of stream miles needing additional nonpoint source corrective actions to meet Clean Water Act goals and objectives is calculated by adding the number of stream miles with use impairments from both point and nonpoint sources to the number of stream miles with impairments from nonpoint sources only. The percentage of waterways with impairments by nonpoint sources is the sum as a percent of the overall stream miles assessed in Illinois.

2. Fish Contamination

In 1996, the Illinois Fish Contaminant Monitoring Program tested fish in 255 watersheds in Illinois. Fish consumption data was available for approximately 4% of the total stream miles and 51% of the total lake acres in Illinois. Fish have been tested and found to be safe for unlimited consumption in 81% of the stream miles and 77% of the lake acres for which there is fish consumption information available. Fish advisories have been issued for the entire Illinois portion of Lake Michigan.

The program tests for pesticides and other compounds such as chlordane, dieldrin, PCBs, and mercury. Since bans have been imposed for many of the pollutants causing advisories (except mercury), the Illinois EPA expects a reduction in the number of fish advisories issued in Illinois over the next five years.

Two areas of fish advisories stand out on Figure 13.

1. **Upper Illinois** - This problem is caused primarily by PCB contamination. There has been a declining trend in PCBs in this area but a combination of a couple factors has complicated the improvement. First, the benchmark for PCBs has gotten more stringent over the past several years. And second, in 1989, PCB levels significantly increased. One possible suggestion is that during the drought of 1988, tug boats and barges stirred up the sediment when the water levels dropped, leading to a recirculation of PCBs.
2. **Sangamon Basin** -The fish advisories in this region have been issued primarily in response to chlordane contamination in lakes (in the closed systems) in the Basin. In this case, the chlordane concentration in fish has been declining and will soon drop below the level of concern.

An expanded fish monitoring program will be implemented downstate in FY98 as a result of an increase in state funding for this important program.

3. Lake Conditions

The overall use assessment combines five individual indices which use physical, chemical, and biological data to measure the various uses of inland lakes (fish consumption, aquatic life, swimming, drinking water and recreation). For each of these separate indices, a particular lake is assigned a value from 1 to 5. The five values representing each of the different uses is then averaged. Lakes with average values of 4 or 5 were rated Good, lakes with values of 2 or 3 are rated Fair, and lakes with average values of 1 are rated Poor. Therefore, the good, fair, poor indicator of overall use support represents a particular lakes' ability to support activities such as aquatic life, fish consumption, swimming, drinking water supply, and other recreation.

The Bureau of Water assesses inland lakes on the two-year 305(b) report cycle. This 1996 Annual Environmental Conditions Report uses data from the most recently completed 305(b) report which presented data from 1996. 75.6% of the acreage of inland lakes in Illinois was assessed for that report.

As part of the 305(b) assessment of use support within Illinois inland lakes, the Illinois EPA differentiates and reports the number of lake acres with use impairments from point sources only, nonpoint sources only,

and from both point and nonpoint sources. The lake acres needing additional nonpoint source corrective actions to meet Clean Water Act goals and objectives is calculated by adding the number of lake acres with use impairments from both point and nonpoint sources to the number of lake acres with impairments from nonpoint sources only. The percentage of inland lakes with impairments by nonpoint sources is the sum as a percent of the overall lake acres assessed in Illinois.

The overall use assessment is an average of four individual indices. These individual indices are fish consumption, aquatic life, swimming, and drinking water. They are combined in the same manner as the inland lakes assessment.

Lake Michigan forms the Northeastern portion of Illinois' border. As the only Great Lake which borders Illinois, Lake Michigan must maintain standards that are more strict than other Illinois lakes. Furthermore, Illinois' largest population center exists near the shoreline of Lake Michigan. An overall use support assessment can indicate whether Lake Michigan meets its standards and is safe for human uses.

The Bureau of Water assesses Lake Michigan on the two-year 305(b) report cycle. This 1996 Annual Environmental Conditions Report uses data from the most recently completed 305(b) report which presented data from 1995. All 63 shoreline miles of Lake Michigan in Illinois were assessed for that report.

4. Persons Served by Compliant Water Supplies

The environmental objective is based upon data that measures the number of people who are served by community water supplies that have incurred either a health or treatment violation. This report highlights the percentage of persons served by community water supplies that were compliant with all health standards including any acute or chronic maximum contaminant level, acute or chronic treatment technique or health advisory during the calendar year 1997. Over 98% of the population served by community water supplies received drinking water in compliance with acute (short term) health standards and over 94% was in compliance with chronic (long term) health standards.

Most violations were short in duration and immediate corrective action was taken by the water supply. Furthermore, water supply customers were advised of health effect violations so that precautions could be taken (e.g. boil order and bottled water provided for infants).

5. Groundwater Conditions

Groundwater quality at community water supply wells utilizing unconfined aquifers in the Ambient Network of Community Water Supply Wells (CWS Network) is being evaluated in relation to Illinois' groundwater quality standards regulations. The CWS Network is intended to represent the detection of pesticides, volatile organic chemicals and other chemical contamination in the population of CWS wells across Illinois. This in turn provides an overview of the groundwater conditions in the "principal aquifers" of Illinois.

The "principal aquifers" used in Illinois were classified by O'Hearn and Schock in 1984 into three basic categories: sand and gravel, shallow bedrock, and deep bedrock. A principal aquifer is defined as an

aquifer with a potential yield of 100,000 gallons per day per square mile and has an area of at least 50 square miles (O'Hearn and Schock, 1984).

The CWS Network design was based upon the sampling of existing CWS wells and incorporates a random probability based scheme (95 percent confidence, plus or minus 5 percent precision and accuracy) which is randomly stratified by aquifer type, geologic susceptibility and well depth. Thus, to represent the entire population of community wells and associated principal aquifers a statistical approach has been utilized. The CWS Network was initiated in 1992. The network selections took into account spatial and temporal factors. To improve statistical accuracy, the CWS Network well selections were made by random selection and stratified by three variables to improve precision and accuracy. The stratification variables included well depth range (0-49, 50-99, 100-149, 200-299, 300-399, and >400 feet), uppermost aquifer material within 50 feet (yes or no), and aquifer type. Aquifer types were designated in six specific Systems: sand and gravel, Mississippian/Pennsylvanian, Silurian/Devonian, Cambrian/Ordovician, and mixed.

In addition, during 1997 the Illinois EPA initiated a targeted rotational monitoring approach designed to further optimize Bureau of Water resources. The Groundwater Section will continue to maintain the Ambient Monitoring Network of Community Water Supply Wells, but will begin sampling this network every two years. This will allow the Bureau to target special studies every other year while maintaining the integrity of the resource assessment. The 1997 rotating monitoring network consisted of wells which were suspected of having groundwater impacts as a result of Safe Drinking Water Act compliance monitoring. The Illinois EPA will report on the outcome of this monitoring network in the 1998 Annual Conditions Report and will return to reporting on the Ambient Monitoring Network in the 1999 Report.

6. Excess Pollutant Load Discharged

All wastewater discharged from industrial or municipal sources into Illinois waterways must meet certain limits on pollutant discharges. Any wastewater discharge that exceeds the standard set for a particular limit is called the "noncompliant" load. This program objective presents the overall "noncompliant" load as a percentage of the total actual permitted load discharged. A "non-compliant" load value will be calculated for each facility on a monthly basis and summarized and reported on an annual basis. The database containing the calculated loads will enable us to summarize load values for pollutants in various categories (i.e. toxic, conventional, metals, etc.) and/or summarized for various groups of facilities (i.e. major/minor, targeted watershed, basin, county, region, etc.).

By looking at wastewater discharges by categories and regions, the program objective gives the public and the Agency a better understanding of where water quality violations may be occurring due to dischargers exceeding their permitted pollutant levels. Separating out the portion of a wastewater discharge that contributes to water quality violations can give the public a better understanding of why water quality violations may be occurring. The Agency can use this information to more narrowly focus its efforts on priority watersheds where non-compliant load discharges may be a problem.

Monthly data from 1997 was used to calculate the 1997 values for the twelve major river basins in Illinois. 300 parameters are reported for about 2600 dischargers.

7. Watershed Plans (Report text has complete explanation)

8. Source Water Protection

The Illinois EPA, Bureau of Water has taken the following steps to implement a source water protection program in Illinois:

- established a Source Water Technical and Citizens Advisory Committee;
- contracted with four Illinois universities to delineate 110 community water supplies recharge areas (approximately 200 to 300 wells);
- developed a recharge area delineation procedure for newly permitted community water supply wells;
- formalized a contract with the Illinois Rural Water Association to assist in the identification of potential contamination sources within wellhead protection areas;
- executed a contract with the Illinois Department of Public Health for the purpose of digitally mapping the locations of all public non-community water supply wells in the state and to conduct potential contamination source inventories within the source water protection areas of these wells;
- initiated delineation of the watersheds for the community water supplies utilizing surface water as their source of drinking water;
- conducted prototypical modeling and analysis of both groundwater and surface water sources utilizing the Bureau's geographic information system and data base systems; and
- begun to develop fact sheets and Internet information which can be utilized by the public.

Implementation of a source water protection program is yielding the following benefits in Illinois: increased pollution prevention implementation; eligibility for up to three bonus points under the state revolving loan fund priority system; eligibility for monitoring waivers and reduced laboratory expenses; added protection under the new Tiered Approach for Corrective Action Objectives; and Conservation Reserve and EQUIP Eligibility Bonus Points.

9. Groundwater Recharge Area Protection (Report text has complete explanation)

10. Areas of Concern

Waukegan Harbor is listed as an Area of Concern (AOC) as defined by the U.S.-Canada Great Lakes Water Quality Agreement (Annex 2 of the 1987 Protocol). The evaluation of the environmental quality of Waukegan Harbor is based upon 14 individual use impairment indicators established by the International Joint Commission (IJC) as specified in the Great Lakes Water Quality Agreement. Currently five use impairments have been identified for the Waukegan AOC based on the listing/delisting criteria approved by the IJC. Following completion of Stage III of the Remedial Action Plan (RAP), an evaluation of the potential for delisting will be made.

LAND QUALITY MANAGEMENT

1. Groundwater Monitoring and Assessment of Significant Releases to Groundwater at Regulated Facilities.

In 1996, the Illinois EPA completed a study that evaluated the groundwater quality of eleven facilities in southwest Illinois from 1977 to 1994. These facilities are located above the American Bottoms Aquifer, which includes the geographic area of western Madison and St. Clair counties in Illinois. The purpose of this study is to evaluate the groundwater impacts and the effectiveness of measures taken to address the impacts.

Groundwater quality was assessed by comparing the applicable groundwater quality standards to concentrations from facility background wells for eleven chemical parameters. Background concentrations are concentrations of regulated substances that are present in the environment, but not the result of releases at the site.

The eleven chemical parameters are: arsenic, barium, chloride, cyanide, iron, lead, manganese, phenolics, sulfate, total dissolved solids, and zinc. Background wells were compared with on-site wells to determine groundwater conditions in the direction of groundwater flow (where the chemicals were expected to move).

The methods used in this study establish realistic core environmental indicator(s) as measurements of contaminant concentrations to evaluate achievement of the first and second environmental objectives (i.e., groundwater at sites required to monitor shallow groundwater. The measurement of contaminant concentrations in groundwater at regulated facilities is being used as the environmental indicator to measure the progress toward achieving the first and second environmental objectives (i.e., (1) groundwater at sites required to monitor shallow groundwater will be protected to meet applicable groundwater quality standards; and (2) decreasing trend in significant releases to shallow groundwater at regulated non-LUST facilities over the next five years).

2. Underground Injection Control

Underground injection is the disposal of fluids underground, through a well. Underground injection is regulated jointly under Resource Conservation Recovery Act (42 U.S.C. 6901 et seq.) and the Safe Drinking Water Act (42 U.S.C. 300f et seq.). This technology is most appropriate for liquid wastes that are difficult or hazardous to treat (e.g., certain chlorinated pesticides).

The wells are permitted by the Illinois EPA. New wells must be sited in accordance with 35 Ill. Adm. Code 730, so that they inject into formations separate from underground sources of drinking water and free of faults or fractures. Drilling logs and similar tests (e.g., resistivity, spontaneous potential, porosity, etc.) must be used to ensure that this requirement is met. Both new and existing wells must be cased and cemented to protect sources of drinking water, so that the injection well does not create a significant risk to human health.

Owners and operators must comply with the operating, monitoring, and reporting requirements specified in their permits and 35 Ill. Adm. Code 730. The monitoring information (e.g., mechanical integrity test results, characteristics of injection fluids, pressure buildup in the injection zone, etc.) to assess compliance (i.e., the injected waste is contained within the injection zone) was used as the environmental indicator to measure the progress toward achieving the third environmental objective (i.e., all injected contaminants are contained in the designated injection zone).

3. Sites Remediated

The acres of land cleaned up is the environmental indicator used to measure progress toward achieving the final environmental objective (i.e., on an average annual basis, an increase in the acres of land where health risk is reduced or controlled). The reported acres remediated for site cleanups are dependent upon Illinois EPA determinations that the activity is completed (e.g., No Further Remediation Letter, 4(y) Letter, Acceptance of Certification of Closure, Termination and Satisfaction Letter, Construction Completion Report Approval Letter, etc. has been issued). For 1997, the reported acres remediated do not include those acres cleaned up under a project that has not been completed or closed (e.g., NPL sites, state response action sites).

Although the performance measure of acres remediated is common to six types of cleanup sites, the procedures and standards applied to cleanup at each of these types are directed by different federal and state statutes, regulations or guidance. However, the risk-based remediation goals for all of these sites were derived consistently through the Illinois Tiered Approach to Corrective Action Objectives process. In 1997, the Illinois EPA reported acres remediated for each of the following six types of sites in accordance with the identified statutory or regulatory requirements for cleanup:

<u>Program</u>	<u>Authority</u>	<u>Acres Remediated</u>
Leaking Underground Storage Tank ("LUST")	35 Ill. Adm. Code 731, 732	366
State Response Action	35 Ill. Adm. Code 750	22
Federal Facilities Environmental Remediation Program	42 U.S.C. 9601 et seq. 40 CFR	16,935.5
Site Remediation Program	35 Ill. Adm. Code 740	1,489.3
Resource Conservation and Recovery Act ("RCRA")	35 Ill. Adm. Code 724, 725	200

The completion of three site remediation program cleanups located in Chicago (2 sites) and Bloomingdale (1 site), and cleanups at the Joliet Army Ammunition Plant contributed significantly to the total acres remediated in 1997.

4. Hazardous Waste

Hazardous wastes are those that are defined by the federal law known as the Resource Conservation Recovery Act (“RCRA”; 42 U.S.C. 6901 et. seq.). Hazardous waste may include wastes which are listed under RCRA by definition or are hazardous by their characteristics which are ignitability, corrosivity, reactivity, and toxicity. Properly disposed hazardous waste must meet both state and federal standards outlined in a site-specific operating permit. 35 Ill. Adm. Code 724 requires owners and operators of hazardous waste facilities to report their activities annually to the Illinois EPA.

Hazardous waste disposal over the next five years is expected to decrease as a result of: (1) greater implementation of pollution prevention and waste minimization practices; and (2) changes in waste management practices from disposal to treatment and recycling.

5. Municipal Solid Waste

A municipal solid waste landfill is a landfill permitted by the Illinois EPA to receive household solid waste and non-hazardous commercial or industry solid waste for disposal. Illinois law and regulations require landfill owners and operators to obtain permits from the Illinois EPA to develop and operate a landfill. The permitting process helps to ensure that the landfill is designed, constructed and operated in a way that does not pose threat to human health or the environment. The reporting and monitoring requirements enable the Illinois EPA to track the operations of the landfill as well as identify solid waste disposal trends statewide.

The amount of municipal solid waste disposed in Illinois landfills is on a downward trend. This trend may be influenced by recycling, waste minimization and pollution prevention practices, and lower volumes of out-of-state waste disposed of in Illinois. The amount of municipal solid waste generated out-of-state and disposed in Illinois landfills will be tracked over the next five years to evaluate its contribution to municipal solid waste disposal in Illinois. This indicator and the total annual amounts of municipal solid waste disposed in Illinois landfills over the next five years will be used to determine the amount of municipal solid waste generated in Illinois.

35 Ill. Adm. Code 858 requires owners and operators of municipal solid waste landfills to report the total quantity of solid waste received on a quarterly basis.

6. Materials Recovery

The Illinois EPA will track the amount of materials recovered from Illinois EPA-sponsored programs or monitored and regulated by the Illinois EPA. Materials are collected as part of four primary programs: (1) household hazardous waste collections; (2) paint collections; (3) used tire cleanups; and (4) landscape waste composting.

The Illinois EPA coordinates 12 to 15 one-day household hazardous waste collections each spring and fall, where citizens can bring harsh chemical cleaners, paints, thinners, antifreeze, weed killers, insecticides and pesticides, and similar household hazardous products. The first of these collections began in November 1989. Through the end of 1996, the Illinois EPA has orchestrated 163 successful collections funded by statewide fees on landfilled nonhazardous solid wastes. The Illinois EPA seeks and encourages

communities or organizations to cosponsor these collection events. The Illinois EPA provides contractor oversight and assumes waste generator status. Cosponsors provide promotion and advertising, site location, and volunteers who supervise traffic control of incoming and departing vehicles, greet and survey participants, and distribute informational handouts for the events. The Illinois EPA has collected data by calendar year since 1989, with the most current data from collections in 1997. Long term collection sites are in Naperville, Rockford and Lake County. These three locations provide area residents with on-going locations to take their household hazardous waste. Operations at these locations required a permit from the Illinois EPA.

Since August 1995, the Illinois EPA has partnered with paint retailers to accept unused/unwanted paint from local area residents for reformulation and reuse. This consolidated/reprocessed paint is then sold or donated at the discretion of each partner. Generally, not-for-profit organizations receive donated paint while all other users buy it. Unusable or waste paint accepted is poured into drums for pickup and disposal by an Illinois EPA contractor.

The Illinois EPA scheduled 21 countywide tire collections from mid-May to mid-November 1997. In 1996, some 6,000 participants brought more than 500,000 waste tires to 31 similar collections. The collection is funded by a \$1 per tire recycling fee that consumers pay when purchasing tires. Residents of the county where the collection is being held can bring their waste tires to the designated collection point during specified dates. Although there is no fee, residents must sign agreements stating they will not accumulate waste tires, and they have no waste tires remaining on their property. The Illinois EPA also contracted with different firms (including the Illinois Department of Correction) to clean up tire dumps around the state. Since 1990, the Illinois EPA tracked the number of countywide collections and cleanups performed annually.

As a measure to conserve available landfill disposal capacity in Illinois, landscape waste disposal was banned in 1990. A large portion of the landscape waste was diverted to landscape waste compost facilities. Owners and operators of Illinois compost facilities must meet the operating and permitting requirements in 35 Ill. Adm. Code 830 - 832. The number of compost facilities identified for 1996 and 1997 are permitted landscape waste compost facilities and farms engaged in composting landscape wastes.

7. Industrial Material Exchange Service

The Illinois EPA's Industrial Material Exchange Service ("IMES") is a free, confidential material exchange program that helps create contacts between companies with unwanted materials and companies that could put those materials to good use. IMES publishes a bi-monthly directory that goes to 14,000 subscribers nationwide. It lists both materials that are available and materials industries are seeking. Request forms are included in the front of each directory. To respond, or to list a material, firms can send phone or fax requests to the IMES office. After a firm responds to a listing, IMES puts the potential user in contact with the generator, with the final transaction and transportation of materials left to the companies involved. Materials listing stay in the directory for a minimum of one year, unless the listing is withdrawn. If firms prefer to list their materials confidentially, IMES will not release a company name or phone number without permission.

Annual cost savings and the amount of material exchanged are provided by participants on a voluntary basis. Annual cost savings are based on: (1) avoided disposal costs (cost savings estimated by generators);

and (2) cost difference between IMES material and feedstock (cost savings estimated by users). In those cases where the amounts were reported in pounds by the participants, the Illinois EPA used 8.33 pounds/gallon as the unit conversion factor.

8. Open Dumping

Open dumping is the consolidation of garbage from one or more sources that is not disposed at a permitted landfill (e.g., bottom of ravines, empty lots, along roadsides). If allowed to remain, open dumps often grow larger and may attract dumping of more garbage. Open dumps create a public nuisance and pose significant health risks to the community. Causing or allowing open dumping is illegal, and may result in substantial penalties. The practice of open dumping may be minimized by a combination of local and statewide enforcement and public education.

9. Contaminated Sites

The measure of new contaminated sites identified in each year from 1989 through 1996 reflects only (1) Leaking Underground Storage Tank (“LUST”) sites which reported releases from regulated underground storage tanks to the Illinois Emergency Management Agency (“IEMA”); and (2) voluntary cleanup sites enrolled in either the Pre-Notice Site Cleanup Program (1989 through 1995) or the site remediation program (1996 to present). The number of new contaminated sites identified in 1997 reflects: (1) LUST sites which reported to IEMA; (2) sites which enrolled in the site remediation program; (3) new state response action sites where investigative or remedial action was warranted; (4) Brownfield Assessment sites evaluated; (5) new RCRA corrective action sites; and (5) additions to the Comprehensive Environmental Compensation and Liability Information System (“CERCLIS”) list. In 1997, the Illinois EPA identified sites for each of the following six types of sites: LUST (1,279); Federal Superfund including CERCLIS sites (10); state response action (17); Federal Facilities Environmental Remediation Program (0); site remediation program (199); and RCRA (9).

Releases of liability issued by the Illinois EPA acknowledge that a site owner or operator has satisfied the requirements of applicable laws and regulations. Authorization to issue a No Further Remediation Letter, 4(y) Letter, or other legal instrument comes from separate laws and regulations: (1) under the LUST program (35 Ill. Adm. Code 732), a No Further Remediation Letter is issued to those sites which have either met the appropriate LUST remediation objectives or have met the site classification and remediation requirements; (2) Under the site remediation program (35 Ill. Adm. Code 740), a comprehensive No Further Remediation Letter is issued to sites where conditions are protective of human health and the environment. A focused No Further Remediation Letter indicates the site owner has elected to limit the environmental investigation and cleanup to specific, identified contamination; (3) under 415 ILCS 5/4(y), the Illinois EPA may issue a letter indicates that a person is no longer responsible for preventive or corrective action at a site; and (4) under RCRA Subtitle C, an Acceptance of Certification of Closure for a specific RCRA Unit may be obtained. Also, a determination of no further remediation may be obtained for solid waste management units investigated and/or cleaned up under the RCRA corrective action requirements of RCRA permits issued by the Illinois EPA. In 1997, the Illinois EPA issued the following releases of liability under the following programs: LUST (730 No Further Remediation Letters); site remediation program (89 No Further Remediation Letters and 4(y) Letters); and RCRA (16 closures). Note, the owners and operators of the LUST sites identified may not receive LUST No Further

Remediation Letters, because some of these sites have been: (1) transferred to the site remediation program; (2) determined to be not subject to 35 Ill. Adm. Code 731 and 732; or (3) closed under another option allowed under 35 Ill. Adm. Code 731 and 732.

Federal regulations require petroleum underground storage tank owners and operators to demonstrate the financial ability to remediate tank releases and to pay for damages to third parties. Federal Underground Storage Tank regulations (40 Code of Federal Register 280) allow, but do not require, states to establish publicly financed underground storage tank funds. Illinois chose to set up such a fund to help tank owners and operators pay for cleaning up leaks from petroleum underground storage tanks.

Since its inception in 1989 and through the end of 1997, the fund has reimbursed \$261 million. Illinois generates money from the fund through a \$0.003 per gallon motor fuel tax and an \$0.008 per gallon environmental impact fee. While \$45 million of the fund is available per year to pay for cleanups, the motor fuel tax and environmental impact fee are due to expire in 2013 and 2003, respectively.

MULTIMEDIA MANAGEMENT

1. Toxic Release Inventory

Many industrial facilities in Illinois must file an annual report that details the release of toxic materials. An inventory of these reports is maintained by the Illinois EPA. This inventory is known as the toxic release inventory or TRI. The toxic chemical release totals presented in this report are based on amounts submitted by all reporting facilities for each calendar year, and exclude those chemicals which have been removed from the list of toxic chemicals by USEPA within the time period represented.

For purposes of long-term trend analysis of toxic chemical release amounts, Illinois EPA excludes chemicals which have either been added to or removed from the list of toxic chemicals by USEPA, or for which reporting requirements have been significantly changed by USEPA during that period. This method of analysis is considered more desirable than using all reportable chemicals as an indicator because the previous years' totals may change significantly due to constantly changing reporting requirements.

2. Emergency Incidents

State and Federal law require the immediate telephone notification to emergency agencies of the occurrence of spills. The frequency of reported emergencies is expected to reflect the degree of care, preventive planning and precautions taken during the manufacture, storage, use and transportation of hazardous chemicals. However, incident frequency can also be influenced by several other factors including changes over time in economic activity, reporting thresholds and awareness of reporting requirements. Furthermore, in Illinois a large proportion of such notifications are to report leaking underground storage tanks (LUSTs) that are discovered during planned removals and renovations. Since most of those LUSTs are not immediate emergencies, we have subtracted them from the total of reported incidents for the purposes of this indicator.

3. Pollution Prevention

The Agency has begun to track progress in pollution prevention by looking at the statewide total quantity of hazardous waste that is reported to be reduced by hazardous waste generators through new source reduction activities. This data is reported on the Hazardous Waste Report From GM that is required under RCRA. The data for this indicator is reported from 1992 until 1995.

4. Environmental Education

Environmental Education program activities can be grouped into three areas: Direct Interactions, Group Interactions, and Mass Interactions. The actual activities involve the preparation of educational materials, participation in environmental events, and/or sponsorship of student internships. In 1997, 328 people were reached through Direct Interaction (such as the Governor's Environmental Corps), 322,934 people were reached through Group Interactions (such as contacts at Earth Stewardship Day), and 7,806,000 people were reached through Mass Interactions (such as the Illinois EPA's exhibit at the Brookfield Zoo).

The specific breakout of the programs counted in the 1997 totals listed above are as follows:

Direct Interactions

Volunteer Lake Monitoring Program:	275 people/year
Governors Environmental Corps (GEC):	39 students/year
Jr. Environmental Corps (GEC Presenters):	14 students/year

Group Interactions

Partners for Clean Air (Employee Education Effort):	197,263 people/year
5th/6th Grade Environmental Educational packets:	102,887 students/year, 1,370 teachers/year
Youth Programs (K-12):	5,568 youth/year
Newsletters:	4,585 people/year
Environmental Awareness Fairs:	2,407 people/year
Conferences/Workshops:	1,613 people/year
Conservation Days:	1,575 students/year
Lincoln Trail Litter Clean-Up:	1,400 Boy Scouts/year
Earth Stewardship Day:	1,200 students/year
Teacher Training:	907 teachers/year
Jr. Environmental Corps:	650 children/year
Ohio River Clean-Up (Litter Clean-Up):	450 people/year
Lake Workshops:	410 people/year
College Programs:	389 students/year
America Recycles Day (Springfield Children's Museum):	230 people/year
Project WET Workshop:	30 people/year

Mass Interactions

Northeastern Illinois Educational Campaign Radio Advertisements:	2,700,000 people/year
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Brookfield Zoo Exhibit:	2,100,000 people/year
Shedd Aquarium Exhibit:	1,850,000 people/year
State Fair Exhibits:	500,000 people/year
DuQuoin State Fair Exhibit:	402,000 people/year
Farm Progress Show:	250,000 people/year
Clean Water Celebration:	4,000 people/year