



# Waste Reduction Guide

*Recycling the  
Ultimate Resource:*

*Retired Professional  
Assistance in Waste  
Reduction Programs  
in Region IV*



*February 1996*

*Pollution Prevention (P2) is the new way American industry is conducting business. It removes the potential to pollute by reducing waste entering the environment. It also increases the efficiency of operations and processes; thus, reducing costs to industries. Reduced costs translates to increased profitability, better competitiveness, and more jobs.*

*The Environmental Protection Agency (EPA) has been tasked with protecting public health and the environment through the enforcement of environmental regulations. Today, EPA is entering a new era of changing the way we conduct business. Rather than focusing on end-of-pipe cleanup, we now stress preventing pollution before it occurs. P2 is now an integral part of EPA. It is fundamental in our improved federal, state, and local partnerships and is incorporated in our environmental justice and sustainable environment initiatives. However, just including P2 activities in EPA initiatives is not enough. Organizations such as TVA, EPA, states, and non-profits must work together to form strong partnerships to promote the full incorporation of the P2 ethic into our daily lives.*

*The P2 technical assistance centers across the Southeast are the EPA's focal point for information exchange. The Retired Associates who staff these centers are essential in providing the necessary expertise to industry representatives as they incorporate P2 strategies at their facilities. EPA salutes these Retired Associates for their experience and dedication in preserving our natural resources and protecting public health. Their interaction with industry and the public lay the foundation for our pollution prevention efforts. As our technical assistance expands, let us continue to support these dedicated individuals and their P2 activities.*

*-Winston Smith, Director  
Air, Pesticides, and Toxics  
Management Division  
EPA Region IV*

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# Introduction

Efforts by various levels of government to promote sound waste management and environmental protection--typically through laws and regulations--have often been less effective than desired and more costly to enforce than expected. Understandably, industry has often been more concerned about reducing compliance costs and their effects on profits than about reducing wastes and their effects on the environment. The threat of penalties has produced suspicion of inspections and assessments, resistance to almost any prescribed changes, and, at best, only grudging, minimal compliance with the letter of the law.

Many states have instituted Waste Reduction Assistance (WRA) or Pollution Prevention Programs to address these problems and the unserved need they represent. In contrast to regulation and enforcement, the WRA approach is based on voluntary cooperation among industries, university industrial extension programs, and state and federal agencies. Only those small industries that request to participate in these joint projects receive waste management assessments. Most of the state programs offer this assistance as free, non-regulatory, non-binding, and confidential. It is not the threat of enforcement penalties but the opportunity for significant cost savings that motivates industries to make any changes that may be suggested.

In EPA Region IV state WRA programs, assessments are specifically made outside the context of regulatory and enforcement processes, and the results are held strictly confidential to protect proprietary interests. Also, industries are under no obligation to implement any of the suggested changes. However, most industries are not only willing but even eager to implement some or all of the changes recommended because they want to take advantage of the associated opportunities for cost savings.

While this approach has obvious benefits for private industries, it is also an effective and economical way for public agencies to accomplish their goals of reducing production of hazardous and other wastes while at the same time helping produce both environmental and economic benefits in the region, including such significant benefits as reduced needs for future waste disposal capacity and environmental effects monitoring.

The WRA approach does not compete with private enterprise. Such assessments are not commonly available from private consulting firms in the region, nor would many small industries be likely to make the speculative investment of contracting for such services even if they were available, because the extent of any potential saving cannot be identified

until after the survey has been completed.

On the other hand, the project may actually stimulate demand for commercial services. WRA assessments do not include designing or constructing any facilities or equipment that may be needed or modifying any processes or techniques as may be recommended. Industries must either implement the waste reduction suggestions on their own or contract with private consulting firms, construction contractors, or other commercial services.

Costs are kept low because many assessments are conducted by retired senior-level engineers, who are specially recruited and given intensive supplemental training to identify and report opportunities for waste reduction. Although these retirees are reimbursed for travel expenses and are paid a modest hourly honorarium to supplement their retirement income, essentially, they volunteer their services as a means of passing on to the next generation the benefit of their specialized expertise and experience. Because the pool of available assessors contains specialists with many years of experience in almost every possible Standard Industrial Classification (SIC) code it is usually possible to choose expertise that closely matches the needs of any particular industry. Because the pool is large, it is usually possible to reduce travel costs by selecting well-qualified retirees who live in the vicinity of almost any industry scheduled for assessment.

## State Waste Reduction Assistance Programs

The services of the retirees are coordinated in many different ways in Region IV. Each state WRA program has adopted the method that best fits its own unique situation. This document briefly describes each method now being used.

**In Alabama** a nonprofit 501(3)c corporation, the WRATT Foundation, has been formed. It is a consortium of regulated and regulator, private and public. It includes on its board of directors the Tennessee Valley Authority, the Environmental Protection Agency, the

Business Council of Alabama, the Alabama Chemical Association, and the Alabama Department of Environmental Management. It is administered by retired professionals rehired full time or part time under contract to the Foundation. Pre-assessments are done by the full-time retirees. The WRAs are performed by the part-time retirees. The WRA team drafts the report. The full-time retirees polish it and issue it. Follow-up is the prerogative of the full-time retirees. A study by Auburn University showed that the industries that have used this program have praised its professionalism and service. The Foundation Outreach Program has provided direct assistance in recruiting, training, marketing, and total program development/implementation to several other states, plus overseas assignments. Published commendations have stimulated strong national and international interest in the Alabama model and foundation approach. A study of 35 assessments by the WRATT Foundation showed a 20:1 benefit to cost ratio that included overhead expenses. See the **WRATT Foundation Study** for details *Contact the Director, John Shields, at 205-386-3633 for additional information.*

**In Florida** the WRA program is called the Waste Reduction Assistance Program (WRAP). It is administered by a non-regulatory part of Florida's Department of Environmental Protection. The retirees are assigned a company that has requested a WRA. They perform the entire WRA and copy the report to the WRAP. Dade County (Miami) also has a Pollution Prevention Program which makes use of the pool of retirees in Florida. The program in 1995-1996 was inactive due to lack of funding. *Contact Julie Abcarian at 904-488-0300 for additional information about the Florida Program and Nicole Hefty at 305-372-6825 for further information about the Dade County Program.*

**In Georgia** the WRA program is called the Pollution Prevention Assistance Division (P2AD). It is administered by a non-regulatory arm of Georgia's Department of Natural Resources. Retirees are used on a limited basis for assessments in Georgia. P2AD relies primarily on full-time staff and partnerships with other technical assistance providers in the state to conduct WR assessments. *Contact Bob Donaghue, Director, at 404-651-5120 for further information.*

**In Kentucky** the WRA program is part of the Kentucky Pollution Prevention Center (KP2C) at the University of Louisville. The KP2C offers environmental training, applied research, and on-site waste reduction assessments to help Commonwealth manufacturers reduce cost and waste.

The WRA program began in 1988 and is administered through an agreement with the State of Kentucky and funded by a hazardous waste generation fee. Program staff oversee and direct industrial pre-assessments. Retirees conduct the entire on-site assessment on their own, in pairs, or with program staff depending on the client needs. Retirees prepare draft reports which program staff review and finalize. Companies receive final reports from the Center.

The KP2C contracts with approximately 10 retirees as of February, 1996. *Contact Cam Metcalf, Executive Director, at 502-852-0965 for further information.*

**In Mississippi** the WRA program is called the Mississippi Technical Assistance Program (MSSTAP). It is administered at Mississippi State University (MSU) under an agreement with the state of Mississippi's Pollution Prevention Program in the Department of Environmental Quality. The retirees are assigned a company that has requested a WRA. Retirees and MSU professors conduct pre-assessments and, at times, have follow-up meetings to assist the companies. Retirees are also being used in conjunction with the Air Division - Small Business Ombudsman Program. *Contact Caroline or Donald Hill, Directors, at 601-325-8454 for further information.*

**In North Carolina** the WRA program is the Office of Waste Reduction, a non-regulatory arm of North Carolina's Department of Environment, Health, and Natural Resources and the oldest state program in the country. Since it is physically centered in Raleigh, at the eastern end of the state, additional resources were needed at the western end of the state. The state program provides technical oversight for retiree assisted WRAs in western North Carolina. The Land-of-Sky Regional Council (LOS) in Asheville administers the Western North Carolina Waste Reduction and Technology Transfer (WNC WRATT) Program. The Tennessee Valley Authority provided funding for the initial program. A pre-assessment is performed by the retirees. They conduct the assessment

and submit a report to the company. The retirees also conduct "water only media" assessments under an agreement between LOS and the Asheville-Buncombe County Water Authority. *Contact Gary Hunt, Director, at 919-571-4100 for further information about the state's program. Contact Tom Elmore at 704-254-8131 for further information about the WNC WRATT.*

**In South Carolina** the WRA is called the Center for Waste Minimization. It is a non-regulatory arm of South Carolina's Department of Health and Environmental Control. The program is staffed by retired professionals rehired full time or part time as state employees. *Contact Bob Burgess at 803-734-4715 for further information.*

Retirees are also used in special industrial sector projects, such as the textile industry. *Contact Bob Mussro at Clemson University, Office of Continuing Education, at 864-656-0870 for further information.*

**In Tennessee** the WRA program is called the Waste Reduction Assistance Program. It is administered by the University of Tennessee's Center for Industrial Services under a contract with Tennessee's Department of Environment and Conservation. This was the first retiree-assisted WRA in the country. The retirees assist the full-time staff (several of whom are rehired retired professionals) to conduct the WRAs. Some of the retirees conduct the entire assessment by themselves and submit a draft report to the staff to be finalized. Others assist the staff in conducting assessments and in training. See the "Tennessee Study" below for the benefits of retiree-assisted WRAs. *Contact George Smelcer, Director, at 615-532-4912 for further information.*

## **Alabama Study**

In 1995, the WRATT Foundation began asking past clients to report on cost-effectiveness of implementing recommendations of the WRATT assessment teams. Of the first set of 50 companies, responses were received from 35. Though only a fraction of the total number of recommendations were implemented, the total savings reported by these companies was almost 3.5 million dollars. In addition, the companies that did report acknowledged that other savings have been realized but cannot be quantified at this time.

The 50 assessments conducted at 35 companies cost WRATT a total of **\$126,844** and resulted in reported savings at assessed industries of **\$3,480,293**. The overall benefit to cost ratio for this work was **27:1** and the average savings per company assessed was about **\$102,000**.

## Tennessee Study

The Tennessee Study was the first project to document the benefits of using retirees for WRA work. The services of retirees were coordinated and administered under the oversight of the Waste Reduction Assistance Program (WRAP) at the University of Tennessee Center for Industrial Services, which coordinated the joint pilot project in Tennessee. The Tennessee Valley Authority supplied the funding and oversight for this pilot program in Tennessee beginning in 1989. The study reviewed and documented results of assessments for 32 industries that volunteered to participate.

In 1992, the study requested follow-up information from the 32 industries involved in the pilot project. Five of the 32 industries declined to participate in the study. The remaining 27 industries agreed to allow publication of their results as anonymous case studies.

These 27 industries documented a combined annual saving of almost **\$2,400,000** (Table 1) from changes based on these assessments. Rounded, that equals an average saving of almost **\$90,000** per industry per year.

In this pilot project, retirees conducted about 75% of the total assessment work; staff from the Center for Industrial Services provided the remaining 25%. Therefore, the portion of the total annual saving for the 27 reporting industries that was attributable to retiree assessments was about **\$1,800,000**, or an average annual benefit of almost **\$67,000** per industry.

Retiree assessment costs were not available on a directly comparable basis, that is, for just the 27 reporting industries. However, the assessment services provided by retirees for the 32 industries contacted for the follow up study totaled **\$59,000**, or an average cost of **\$1,844** per industry.

Even on that basis, if the resulting rate of saving had been realized for only a single year, there would be a **36:1** ratio between the average benefits

and average costs for the pilot project (Table 2 and Figure 1). In other words, \$36 was saved for every \$1 spent, including not only the direct costs for assessment time and associated travel reimbursement but also all the costs for program development, training, overhead, and reporting. In fact, the benefit:cost ratio is continually increasing, because the costs were one-time costs while incremental savings continue accumulating year after year.

## Tennessee Valley Authority

The Tennessee Valley Authority is a regional federal agency that assisted (along with the Environmental Protection Agency (EPA) and the University of North Carolina - Asheville) in starting the first retiree-supplemented Waste Reduction Assistance program. A significant goal of TVA's Waste Reduction Assessment and Technology Transfer (WRATT) program was to assist state and local governments in developing similar programs. The recognition the program received in several national publications resulted not only in many additional requests for industrial assessments but also in requests to assist state and local governments in developing and implementing similar waste reduction programs. Such programs have now been adopted not only in Region IV by the states of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee (Figure 2) but also by Iowa, New Hampshire, Vermont, Michigan, and the city of Los Angeles, California. Several other state programs have either started retiree-assisted programs or are contemplating doing so. TVA accesses the retirees in the Tennessee Valley and elsewhere to assist in their Waste Reduction activities when needed. *Contact Steve Hillenbrand at 423-632-8489 for further information.*

## EPA Regions III and IV Clearinghouse

Called the Waste Reduction Resource Center (WRRC), it is housed with the NC state WRA program in Raleigh. It provides free waste reduction information to anyone requesting it in Regions III or IV and elsewhere. It is staffed by previously retired professionals rehired full time. The WRRC is supported by EPA Regions III and IV, TVA, the state of North Carolina, and the National Caucus and Center on Black Aged - Senior Environmental Employment. *Contact Vic Young, Coordinator, at 800-476-8686 for further information.*

# The Annual Southeastern Waste Reduction Retiree Conference

Co-hosted by TVA and EPA Region IV, its purpose is to provide networking and training opportunities for retired professionals working in WRA programs in the Southeast. All retired professionals assisting state WRA programs in EPA Region IV are invited. It was initiated to help keep these retirees current on waste reduction issues and advancements.

## Guidelines for Starting a Retiree Program

Listed below are suggestions that should be tailored to accommodate a specific situation.

**Pick** the brains of programs that operate similarly to the way you plan to function.

**Place** a classified advertisement in the newspapers in the locality where you wish to attract retirees. It could read : "Retired engineers to work part time helping companies save money by reducing their wastes. Industrial experience required. Training, small hourly honorarium, and expenses provided. Send resume to ....."

**Interview** the applicants with the skills you require. Especially look for ability to interact, write reports, and pick up new ideas.

**Decide** if you want the retirees to be under contract or employees of your organization. If they are contractors, consider how you need to handle social security and income tax withholding, expenses (what is covered, limits), and workman's compensation. *Contact Steve Hillenbrand at TVA for the latest options available.*

**Provide** general training in waste reduction techniques. Be prepared to provide additional specialized Waste Reduction training. TVA offers excellent generalized training for a reasonable cost.

**Keep** your retirees busy. If you do not meet their expectations, they will become disillusioned and drop out of your program. Always let them know that you appreciate their efforts.

## Tables

Table 1. Documented Annual Savings for TVA-Funded  
Waste Reduction Projects in Tennessee, 1989-1992

<u>TVA project No.</u>	<u>Documented annual savings (\$)</u>
8	240,000
9	8,000
10	7,560
11	14,800
12	95,000
14	68,500
15	0
16	65,000
17	8,000
18	20,000
19	3,480
20	10,000
21	49,000
22	15,000
23	3,000
24	0
27,28	960
29	0
31	179,019
33	19,000
34	4,500
35	4,382
36	1,800
37	15,600
40	1,298,025
<u>41</u>	<u>250,000</u>
27 projects	2,380,626

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No data were available for 5 projects

## Table 2. Benefit:Cost Analysis For TVA-Funded Retiree-Assisted Waste Reduction Assessments

### Given:

Total cost of retirees for 32 audits = \$59,000

Total documented annual savings for 27 audits = \$2,380,626

Fraction of audit work done by retirees = 3/4

### Results:

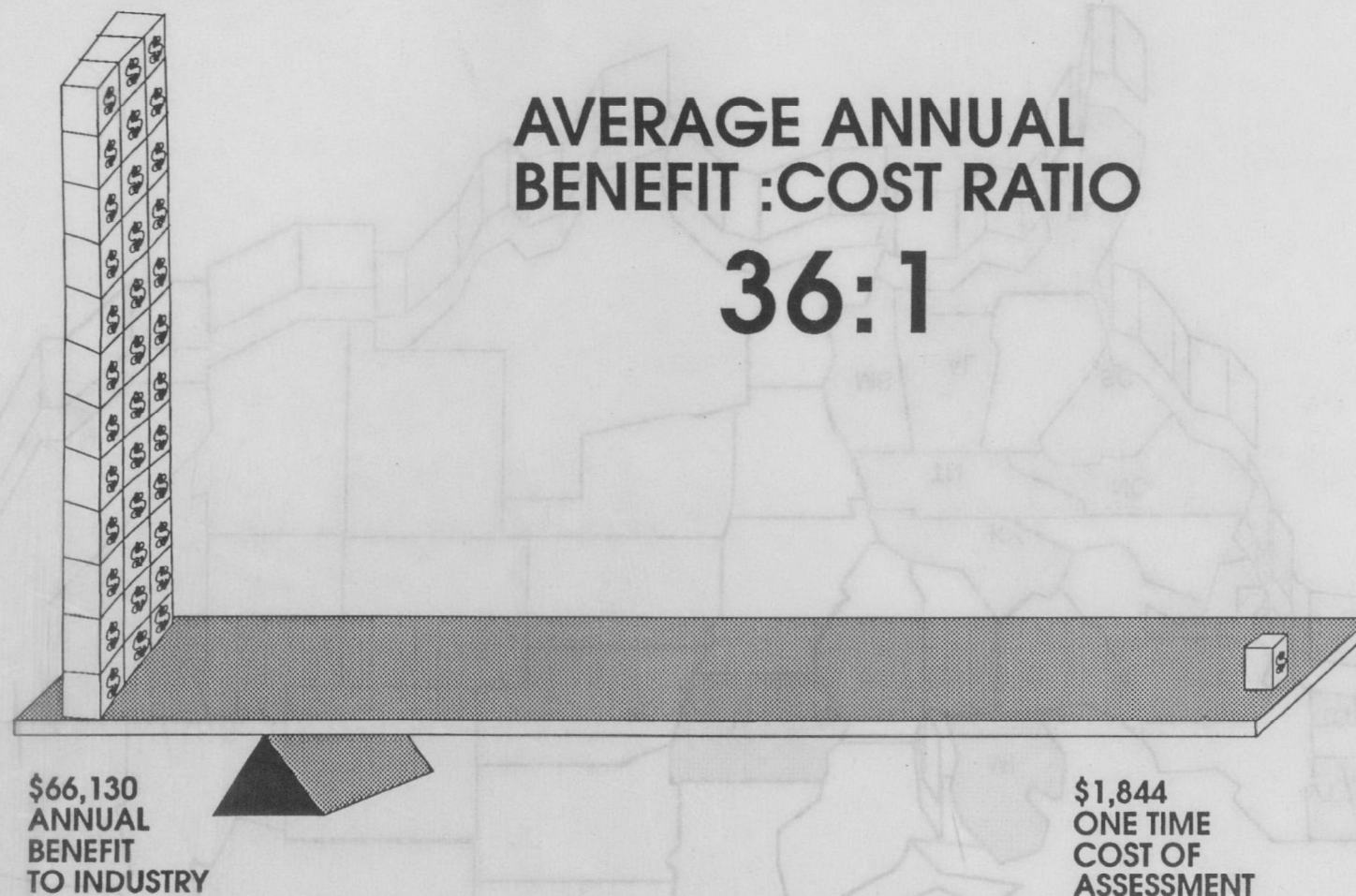
$\$2,380,626 / 27 \text{ audits} = \$88,171 \text{ average annual benefit/audit}$

$\$88,171 \text{ average annual benefit/audit} \times 0.75 \text{ audit/benefit from retirees} =$   
 $\$66,129$

$\$59,000 / 32 \text{ audits} = \$1,844 \text{ average retiree cost/audit}$

$\$66,129 \text{ average annual benefit from retiree} / \$1,844 \text{ average direct retiree cost} =$   
benefit:cost ratio = 36 : 1

## Figures



**FIGURE 1. AVERAGE ANNUAL BENEFIT: COST RATIO FOR  
TVA FUNDED RETIREE ASSISTED WASTE REDUCTION  
ASSESSMENT PROGRAM IN TENNESSEE 1989-1992**

FIGURE 2. WASTE REDUCTION PROGRAMS  
WITH RETIREE ASSISTANCE

