

ENVIRONMENTAL SYNOPSIS

The Chairman's Corner

Rep. Scott E. Hutchinson, Chairman



The Joint Conservation Committee played a key role in the development of Pennsylvania's original Waste Tire Recycling Act (Act 190 of 1996) and a follow-up measure, Act 111 of 2002. Continuing its own follow-up efforts on the ever-evolving scrap tire recycling and reuse industry, the committee recently hosted a meeting with

Michael Blumenthal, executive director of the Rubber Manufacturers Association (RMA) and the Scrap Tire Management Council, and with a number of entrepreneurs in the scrap tire business in Pennsylvania. The group reviewed the RMA's most recent market report entitled "U.S. Scrap Tire Markets 2001", and discussed scrap tire markets and market development in Pennsylvania.

The RMA report is generally upbeat about market development for recycled tires. The report notes that nationwide in 2001, approximately 77.6 percent (218 million) of the 281 million scrap tires generated annually were being recycled. That represents an increase of 11.2 percent from 1998 in the number of tires going to the various markets that exist for scrap tires.

Major growth markets include ground rubber applications where the number of tires used tripled, and civil engineering applications where usage doubled. The tire-derived fuel market is spotty, with cement kilns showing substantial growth, while the pulp/paper, utility/industrial boiler and dedicated scrap tire to energy markets declined. Future growth is projected only in the cement kiln sector. Tire-derived fuels remain the single largest market for scrap tires, with a 40.9 percent market share.

Although it has not happened here in Pennsylvania, the use of ground rubber as a modifier in asphalt-rubber mixes in road construction remains the single largest market for ground rubber. The Pennsylvania Department of Transportation (PennDOT) is awaiting final reports from two five-year pilot projects testing asphalt-rubber mixes on Interstate-70 in Somerset County and I-81 in Schuylkill County. Preliminary results from the department indicate that the mix performed fairly well in the I-70 test, but no better and perhaps a little worse than standard surfaces in the I-81 corridor. The use of rubber in asphalt has worked well in a number of other areas, including California, Arizona and Florida, and is being used

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NOTES FROM THE DIRECTOR

CRAIG D. BROOKS, DIRECTOR

Problems with waste tires in many states are causing tire recycling efforts to go flat. In Louisiana, the waste tire program is centered on a tire management fund that collects a fee from new tire dealers and uses the money to process and recycle used tires generated within the state. Sounds simple enough. Unfortunately, a tracking system was not implemented and payment for tires originating outside the state has reduced the balance of the management fund from \$6.4 million to less than \$325,000.

In Oregon, imported waste tires are processed into crumb rubber and used for tire derived fuel (TDF). The program is funded from fees collected from exporting states. Due to the implementation of stricter emission standards for waste-to-energy facilities and the fact that crumb rubber companies found less expensive waste tires in Canada, the tire recycling industry in Oregon no longer turns a profit. In fact, the programs in Louisiana and Oregon are typical of tire recycling programs in many states ...not so in Pennsylvania.

The passage of Act 190, the "Waste Tire Recycling Act" in 1996, set in motion a system to identify, inventory and remediate stockpiled waste tires in Pennsylvania and established a waste tire cleanup program that has been the envy of other states.

The goal was to remove and reuse all abandoned waste tires in the Commonwealth and to develop and expand markets for the continued use of newly generated tires. The Act provided \$5 million over a 5-year period for tire cleanup contracts, to be awarded through competitive bidding, and \$2 million annually for investment tax credits for companies investing in tire recycling equipment.

In combination with Act 190 funding, DEP administered three other grant programs to address and eliminate stockpiled tires. As a result, nearly \$11 million has been awarded to support waste tire recycling in Pennsylvania. An overview of the funding sources shows that \$3.2 million in Act 190 grants have been awarded for waste tire cleanup projects and was supplemented by \$3.7 million in Political Subdivision Grants, followed by \$2.9 million in Industrial Market Development Grants and \$1 million in Waste Tire Recreational Grants. These grant programs helped reduce the 36 million stockpiled tires to 13 million since the program began in 1997.

That's not to say Pennsylvania's program is without its share of problems. Just last year, Act 190 was amended to reflect changes in the scrap tire industry.

Act 111 of 2002 created a tracking system for waste tire disposal to help eliminate the creation of new tire piles in Pennsylvania and established a grant program to encourage community collection and cleanup of waste tires. The Waste Tire Collection Grant Program provides funding to reimburse counties, municipalities and nonprofit organizations the costs for establishing and operating tire collection programs. Up to \$250,000 per year will be made available from the Recycling Fund to provide for these grants. Hopefully, the grant program will help communities eliminate unwanted scrap tires and tackle the problem of "fugitive" tire piles being created.

More recently, the Joint Committee held a meeting with scrap tire recyclers to discuss some additional changes to Pennsylvania's program and the continued support for the growth of scrap tire markets and tire derived products. (See Chairman's Corner on page one). A perfect example of the use of tire-derived products is HERSHEY PARK Stadium's new synthetic grass system installed at the end of April 2003. The project includes synthetic grass consisting of a selected crumb rubber and sand mixture laid over a prefabricated rubber pad manufactured by Dodge-Regupol of Lancaster, Pennsylvania. More than 257,000 pounds of waste tires were used to cover the 92,000 square foot stadium surface.

Act 190 already requires DEP, DCNR and PennDOT to use waste tires in all appropriate construction and engineering activities paid for with public funds. DCNR is currently using waste tires for stream improvements and playground renovations. And although PennDOT uses ground crumb rubber in certain highway applications such as crack sealing, efforts are still underway by the Joint Committee to require the use of crumb rubber in highway paving applications. The use of Rubber Modified Asphalt (RMA) in highway construction projects would virtually eliminate stockpiled tires in Pennsylvania and use the supply of newly generated waste tires each year. Look for more improvements to the scrap tire program in the near future.

For information on the Waste Tire Collection Grant Program, visit DEP's website at: http://www.dep.state.pa.us/dep/deputate/airwaste/wm/recycle/Forms/tire_col_grant.htm.

RESEARCH BRIEFS

Each month, the committee's staff researches and prepares a number of "briefs" on several topics relevant to the Joint Conservation Committee's mission. Very often, these briefs include references to reports and further research on the topics so that readers may pursue issues on their own.

Progress and Gaps in Infrastructure Security

— Tony M. Guerrieri, Research Analyst

Concerns over the security of public water infrastructure have increased significantly since September 11, 2001. Issues range from the potential for physical damage of critical assets, to actual contamination of the water supply, to cyber attacks on information management systems or other electronic systems. Although the water sector has taken great strides to protect its critical facilities and systems, a report by the U.S. General Accounting Office (GAO) suggests that water utilities and other critical industry sectors remain vulnerable to a variety of terror scenarios that could inflict casualties and severe economic damage.

The GAO report, *"Critical Infrastructure Protection: Challenges for Selected Agencies and Industry Sectors"*, tracks the progress key federal agencies and five industry sectors - including water - have made in addressing terrorist threats. The report also examines gaps in preparedness, and offers ideas for future actions. The report finds that current efforts remain sporadic and fall far short of what might be necessary in a major terrorist event.

The nation's health, wealth, and security rely on the production and distribution of certain goods and services. The array of physical assets, processes, and organizations across which these goods and services move is called critical infrastructure. A 1998 Presidential Directive called for the creation of eight private sector Information Sharing and Analysis Centers (ISACs) to protect critical infrastructures from attack.

The ISACs are privately run clearinghouses for companies in each sector to share information on vulnerabilities, threats, and attacks with one another, as well as with other ISACs and the government's National Infrastructure Protection Center (NIPC) – now part of the Department of Homeland Security. The idea was to provide a coordinated national effort to put preventive, response and recovery measures in place to ensure security. The ISACs were designed to facilitate communication among industry sectors and counter-terrorism and law enforcement experts, as well.

The GAO report covers five industry sectors: Information Technology, Telecommunications, Energy, Electricity, and Water, and makes a number of troubling conclusions. Perhaps the most troubling is that a lack of communication still prevents comprehensive action to stop and respond to terrorist events. The ISACs for Energy and Water will not share security-related information with other centers. Those two, and the Information Technology ISAC, will not give the NIPC access to their electronic libraries of reported incidents. The Telecommunication ISAC has yet to establish such a library. Only the Information Technology ISAC has developed baseline statistics on the normal levels of cyber attacks – so the others may not be able to empirically detect an increase in attacks.

The five ISACs, once envisioned as the keystone of a national cyber security program, are not doing much sharing with the government. The centers report some incidents to NIPC – anywhere from one to four a month each. By not fully implementing all key activities, however, the report concludes that the ability of the ISACs to gather, analyze, and disseminate information within and across sectors and the government could be limited. Among hindrances to sharing information with the federal government cited frequently by all five ISACs is corporate fear that the information they give to the government could become public knowledge through the Freedom of Information Act (FOIA).

Congress tried to address that concern when it included in the Homeland Security Act a provision that exempts shared critical infrastructure information from FOIA disclosure. The GAO concluded that it is too early to tell whether such restrictions will improve information sharing, or whether additional actions may be needed, such as the use of public policy tools, to encourage increased private-sector critical information protection efforts and information sharing with the federal government.

The GAO report (GAO-03-233), is available at <http://www.gao.gov/cgi-bin/getrpt?GAO-03-233>. To order printed copies, call the GAO at (202)-512-6000.

Report Investigates State of the Air

— Jason H. Gross, Research Analyst

An American Lung Association report entitled *"State of the Air: 2003"* concludes that ozone levels commonly found in many American cities during the summer months can damage lungs and airways, and that despite improvements over previous air quality testing results, the overall air quality remains dangerous in many areas of the country. Over half of the monitored counties received an F rating.

The report includes data from 1999-2001 and represents the most recent complete ozone monitoring data available. The Environmental Protection Agency (EPA) has analyzed the report for accuracy and quality assurance and given its evaluation that the report is a valid and accurate portrayal of the state of the air.

Ozone is the primary focus of the report because it is the most damaging and pervasive outdoor air pollutant. Nearly half of the U.S. population lives in areas with unhealthy levels of ozone. Ozone is an intensely irritating gas that reacts chemically with delicate internal bodily tissues such as the lung, damaging the airways and causing them to become inflamed, reddened and swollen. This reaction occurs most often in the summer months in urban areas. Ozone also increases the risk of asthma attacks and the risks associated with lung and heart diseases. Individuals with weaker lungs such as the elderly, children, and those with chronic lung disease are the most susceptible to breathing problems resulting from the existence of elevated ozone levels. Over 7.4 million adults and 2 million children with asthma live in counties that received an F in ozone air pollution.

In recent years scientists have focused on the long-term effects of prolonged exposure to high levels of ozone, according to the report. For example, in a study of college freshmen who were lifelong residents of California, a strong correlation of ozone exposure to reduced lung function was found. Another study showed that among U.S. Military Academy cadets, those who served in high ozone areas in New Jersey showed a larger drop in lung function than those who served in lower ozone levels.

According to the report, children are at increased risk because their growing lung tissue is especially vulnerable to the harmful effects of ozone. Compounding this crisis, children spend a larger percentage of their time outdoors, especially in the months with higher ozone levels. The report cites a new study that shows increased evidence that ozone inhibits normal lung development in children. Among 1,600 children, scientists found that the children's exposure to ozone

was correlated with a reduced ability to push air out of the lungs, which is an indicator of growth in the lung function. According to the report, larger decreases in lung function were observed in children who spent more time playing outdoors.

The report states that children with asthma are particularly susceptible to ozone emissions and complications resulting from ozone exposure. One study that the report cites found that asthmatic children who were born premature or who had low birth weight are especially susceptible to the effects of summer ozone. In another study of 850 children living in cities, morning peak expiratory flow rate was deeply affected by increased ozone levels. According to the report children with asthma can benefit from reduction in ozone concentrations. In areas that made limited efforts to greatly reduce ozone emissions, researchers have found significant reductions in the urgent care visits and hospitalizations for asthma among children ages 1-16.

Pennsylvania falls within EPA's Region 3 for purposes of measuring air quality. The Philadelphia region was the 13th most polluted region in the country and the Allentown/Bethlehem/Easton area was up from the 35th most polluted area to 23rd.

The air quality index established by the EPA is used by state and local agencies to categorize, by color, the air pollution levels in an area. According to the report, there have been some noticeable reductions in the number of orange (unhealthy for sensitive groups), red (unhealthy) and purple (very unhealthy) days. The sources of emissions that are responsible for these unhealthy days are mainly from highway vehicles (33%), electric utilities (28%), and off-highway vehicles (17%).

For more information or a copy of the full report visit the American Lung Association on the Web at: <http://lungaction.org/reports/stateoftheair2003.html>.

Output Drops From Big Polluters in North America

— Tony M. Guerrieri, Research Analyst

According to a report by the Commission for Environmental Cooperation (CEC), large facilities in North America are making progress in taming pollutant releases, while releases from smaller facilities have increased. The report, *"Taking Stock 2000: North American Pollutant Releases and Transfers"*, provides an overview of pollution by each state and province. It examines at a continental

level industrial pollution sent directly into the air, land and water or sent off-site for treatment or disposal.

During the 1998–2000 period, the 3,600 larger industrial facilities reporting more than 100 tons of chemical releases and transfers recorded a seven percent reduction in pollutants. However, there was a 32 percent rise in pollution from small industrial producers. These 15,000 facilities, a cross-section of industry ranging from metal fabricators to food processing plants to lumber mills, with chemical releases and transfers up to 100 tons, represent the majority of polluters in Canada and the United States.

Companies in the United States showed far more success in controlling emissions of hazardous pollutants than companies in Canada. Pollution from smaller facilities in Canada was up 66 percent between 1998 and 2000, more than twice the percentage increase in the United States, which was 29 percent over the same period.

Despite the trend among smaller industrial facilities, the group of 3,600 larger industries still produced 90 percent of total North American pollution. Hydrochloric acid, which can produce environment-damaging acid rain, topped the list, with coal-fired electrical power plants still being the biggest emitters of hydrochloric acid.

The report found more than 3.3 million tons of chemicals released and transferred in 2000, including known carcinogens and substances linked to birth defects. Among the carcinogens, styrene was at the top of air pollutants – more than 30,000 tons in 2000.

Six jurisdictions – Texas, Ohio, Ontario, Pennsylvania, Michigan, and Indiana – accounted for 37 percent of the total releases that year, with reports in excess of 165,000 tons of chemical releases and transfers each. The top 15 facilities reported 255,600 tons of releases and transfers, or eight percent of the total.

While the cross-border movement of pollutants is limited, Canada became a net exporter of toxic chemicals by virtue of a 43 percent drop in U.S. exports to Canada from 1998 to 2000. Canadian facilities sent roughly 36,000 tons of chemicals to the U.S. in 2000.

Overall, North America has reduced industrial releases and transfers of chemicals by five percent in the six years from 1995 to 2000. Decreases were most dramatic in the U.S. where on-site air releases dropped 31 percent over six years. Off-site releases increased by 41 percent.

The report uses data from the United States' Toxic Release Inventory and Canada's National Pollutant Release Inventory databases, which are publicly accessible. It considers only 206 chemicals that are common to both databases. Mexico is in the process of developing a comparable database, but it is not far enough along to be included in the report.

A copy of the report is available from the CEC, 393, rue St-Jaques Ouest, Bureau 200, Montreal, Canada H2Y 1N9, telephone (514)-350-4300. The report is also available at: http://www.cec.org/files/PDF/POLLUTANTS/TS00_Sourcebook_en.pdf.

Incorporating Science in Ecological Restoration Projects

– Jason H. Gross, Research Analyst

A report entitled *“South Florida Ecosystem Restoration: Improved Science Coordination Needed to Increase the Likelihood of Success”*, is designed to provide a roadmap toward increasing scientific involvement in ecological restoration projects. Using this report's findings as an example, we can better understand the complex coordination of planning and science that is needed to create coherent and effective restoration projects.

The South Florida ecosystem includes a broad mixture of natural, urban, and agricultural areas surrounding the Everglades. The Everglades stand as an example of a natural system that, while it has seen human intervention, it is still capable of being rehabilitated to an original state. Before human intervention, fresh water in the ecosystem flowed into the everglades in a slow moving sheet that created the particular mix of wetlands that now form the ecosystems. This system has been damaged by human intervention in the forms of damming, water flow alteration, and pollution. Efforts to recreate the original flow of water that sustains the delicate balance in the ecosystem are being made so



that the Everglades can be restored to a more authentic state. This restoration project requires a complex coordination of planning and science.

The South Florida ecosystem is home to a large population, and supports agricultural, tourism and industrial economies. This diverse set of areas is not completely dissimilar from the diverse set of areas that Pennsylvania supports, even if the exact type of composition and climate differs. We can extrapolate from the efforts to correlate science with planning that are being studied in Florida with efforts to restore aspects of Pennsylvania's ecosystem.

Efforts to change the detrimental effect of human development on the Florida ecosystem has led to the establishment of a task force charged with coordinating and facilitating the restoration of the ecosystems. The task force is charged with three overall goals:

- improving water by restoring natural hydrologic functions to the ecosystem while providing adequate water supplies and flood control;
- restoring, protecting, and preserving the natural ecosystem by restoring lost habitats and changing current land use patterns to include more green space and allowing growth in a more planned fashion; and
- fostering the compatibility of the human engineered and natural systems to find a balance that restores ecosystem health.

According to the report, because of the complexity of issues surrounding ecosystem restoration, not enough information is currently available to properly coordinate planning and restoration efforts with science to produce the maximum benefit. More scientific study must be done in order to better inform restoration decision-makers, who will continually need to review and balance the needs of the ecosystem and human development.

The gaps in scientific information that are limiting the restoration project fit into three categories:

1. Gaps that threaten system-wide restoration if they are not addressed. An example of this is information on contaminants such as fertilizers and pesticides. Information on contaminants, what is used in what areas, and what affects these contaminants have on a long-term basis is not currently available. These contaminants are carried by water, deposited in sediments, and are absorbed by organisms that live in the water and sediment. This causes negative affects on species survival and reproduction that is a great concern to overall ecosystem health.
2. Gaps that threaten the success of any particular restoration project if they are not addressed. Information on the design of many projects is insufficiently tailored to the project at hand. Scientific study must be included in each project to streamline and refine its design.
3. Gaps in information and tools that will prevent restoration officials from using adaptive management to pursue restoration goals. The problem here is the lack of mathematical models that would allow scientists to simulate aspects of the ecosystem to better understand how the ecosystem would respond to potential restoration actions.

For more information and a copy of the full report contact the GAO at: <http://www.gao.gov/new.items/d03345.pdf>.

News to Use in the Environmental Synopsis... share it with a friend

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ON THE HORIZON . . .

A LOOK AT UPCOMING EVENTS

Check this space over the summer months for fall's Environmental Issues Forums and other upcoming events. No public events are scheduled at this time.

Environmental Issues Forums are open to the public.
Please call the committee office at (717) 787-7570 if you would like to attend.

COMMITTEE CHRONICLES . . .

REVIEW OF SOME MEMORABLE COMMITTEE EVENTS

May's Environmental Issues Forum was a collaborative effort with the Pennsylvania Municipal Authorities Association (PMAA) and four other organizations that gathered in Harrisburg for their collective Environmental Infrastructure Legislative Day.



Committee chairman Rep. Scott Hutchinson (right) offered opening remarks, and PMAA Deputy Executive Director John Brosious (left) welcomed attendees. Rep. Hutchinson and committee Executive Director Craig Brooks also had the opportunity to chat with delegates about environmental infrastructure issues (right).



Pictured at lower right is part of the crowd of more than 200 who attended the forum.

Among legislative members attending and asking questions was Rep. Carole Rubley of Chester and Montgomery Counties' 157th Legislative District (left).



in greater amounts in Nebraska and Texas. Among other major sectors of expected growth in the ground rubber market are athletic/sport surfacing, playgrounds and soil amendments. (See Notes from the Director on page two for more on rubber modified asphalt and a recent example of sport surfacing using crumb rubber from recycled tires.)

Civil engineering applications show great promise, both nationwide and in Pennsylvania. Many of these applications utilize shredded tires and often can use the dirtier tires typically found in abandoned stockpiles. However, as the attendees at the committee meeting pointed out, an issue that needs to be addressed is the length of on-site storage time for shredded tires headed for such uses, and the amount that can be stored. If regulations are overly strict, the use of shredded tires for civil engineering could be limited.

Among civil engineering uses of scrap tires in Pennsylvania are as part of sound walls or noise barriers along highways. For example, PennDOT has used both shredded and crumbed tires in sound walls along I-81 in Dauphin County and I-78 in Lehigh County, as well as on the Blue Route in Chester County and Route 222 in Berks County. Other uses are in beneficial landfill applications, and as septic system drain fields.

Among recent encouraging developments is a PennDOT plan to use 760,000 shredded scrap tires in a first of its kind use of tires as fill material in a double embankment on the Tarrtown Bridge project in Kittanning, Armstrong County. According to PennDOT's Strategic Environmental Management Program (SEMP), because of the nature of the soil there, a lightweight fill product is needed and it is believed tires will do the trick. The use of tires should also lessen sediment and settling time. PennDOT intends to monitor the site and if it works, it could open up a new market. In addition, PennDOT has been working with DEP to use tires in this project from abandoned stockpiles and has worked with the local recycling coordinator in waiving disposal fees to encourage local concerns to turn in waste tires. As a result, some 10,000 tires have been collected locally.

Such flexible approaches are what are needed to further stimulate waste tire markets. The committee heard that same message from those in the tire processing, recycling and remanufacturing industries that attended our meeting. The sentiment is that tire recycling and reuse is subject to inconsistent regulation and a lack of understanding of the nature of the business and its needs. Those in the business are also seeking some regulatory changes in order to stimulate markets.

Among their concerns is the classification of waste tires being used for civil engineering purposes as residual waste. That increases costs and lessens profitability, thus damping down potential market uses. Those attending urged that a source of funds dedicated to market development be explored. The storage time and amount issues mentioned above are also causes for concern. The need to refine standards to make shredded tires more attractive as fuel, particularly for potential fuel users such as cogeneration plants, was underscored during the meeting.

While Pennsylvania has come a long way in reducing waste tire stockpiles and encouraging the reuse of scrap tires since the adoption of Act 190, market expansion remains a key ingredient in furthering waste tire recycling. The committee will be working on a number of the suggestions offered at the meeting, so stay tuned for further developments.



How to Contact The Joint Conservation Committee

Phone:
717-787-7570

Fax:
717-772-3836

Location:
Rm. 408, Finance Bldg.

Internet Website:
<http://jcc.legis.state.pa.us>

Mail:
Joint Conservation Committee
PA House of Representatives
House Box 202254
Harrisburg, PA 17120-2254

