From Dolan to Ducktown: A Cross-Country Environmental Law Pilgrimage
by Robert V. Percival*
grounds and explained the Dolans’ development plans. I was surprised when we encountered a muskrat swimming in Fanno Creek and the large pond behind the property that the clerk said attracted considerable wildlife.

This visit inspired me to turn my return trip to Maryland into a cross-country pilgrimage to the sites of famous environmental cases. I visited the sites of seven other environmental controversies decided by the Supreme Court. At each site I acquired new perspectives on cases I had long been teaching and I took photographs to show my students to help make the cases come alive.

**PUD No. 1 of Jefferson County v. Washington Dept. of Ecology**

During a weekend trip to Washington’s Olympic Peninsula, my family and I made an excursion to the Dosewallips River at the edge of Olympic National Park. A public utility district had sought to build a dam there that ultimately was blocked after the Supreme Court upheld stringent environmental limits imposed by the state. Hiking along the river made me appreciate why the state of Washington would want to protect this pristine resource.

**Babbitt v. Sweet Home Chapter of Communities for a Great Oregon**

Heading south from Portland, we stopped in the town of Sweet Home, Oregon, where a group sympathetic to the timber industry had fomented a major challenge to the Endangered Species Act. While the Supreme Court rejected the timber industry’s interpretation of the ESA, the town clearly had not. Its welcome sign proclaimed Sweet Home “Tree City, USA,” and statues of a logger and a miner towered over the grounds of the local museum. A local pizza parlor featured a giant mural of loggers attacking trees in old growth forests with hand saws a century ago. While it was no surprise to discover a local barber shop named “Clear Cuts,” it seemed entirely serendipitous that the film then showing at the local movie house was “Species.”

**Sierra Club v. Morton**

The most dramatically beautiful scenery we encountered was in Mineral King, a secluded canyon in the Sierra Nevadas that the Disney Company had once chosen as the site for a gargantuan ski resort. Although the Supreme Court rejected the Sierra Club’s effort to use the controversy to grant it virtually automatic standing to litigate environmental cases, Disney ultimately abandoned its development plans. The area remains spectacularly beautiful and largely off the beaten path as trailers and RVs are prohibited on the narrow winding road leading into the canyon. A sign in a small store near the end of the road reveals that the answer to the question “How many curves were on this road?” is 639.

**Arkansas v. Oklahoma**

After brief stops at the Grand Canyon and Amarillo’s bizarrely beautiful Cadillac Ranch, we resumed our environmental pilgrimage in a futile quest to find the Fayetteville, Arkansas sewage treatment plant. Driving along the banks of Oklahoma’s scenic Illinois River, we saw what Oklahoma had sought to protect from Fayetteville’s sewage. The Supreme Court’s decision rejecting Oklahoma’s protest had given me the impression that Oklahoma had tailored its regulation unfairly to favor the home team. But driving along the river on a summer Sunday afternoon made me appreciate why Oklahoma would want to protect a river that attracts hundreds of canoeists, rafters, fishers and swimmers.

Night fell as we encountered Fayetteville’s welcome sign (“The First Home of Bill & Hillary Clinton”)
and we never did find the sewage treatment plant. Instead we settled for a picture of the other end of the local sewage system, the toilet in our Day’s Inn.

Citizens to Preserve Overton Park v. Volpe

We made an unplanned stop at the site of another case while waiting for the National Civil Rights Museum to open in Memphis. (OK, I admit we also stopped at Graceland, but we didn't buy a ticket to go in -- reading the list of activities to celebrate the anniversary of Elvis’s death was enough to satisfy our curiosity). On our way to lunch at McDonald’s, it suddenly dawned on me that an environmental case had arisen in Memphis. Sure enough, Overton Park was just three blocks away. The park, which is home to a golf course, art museum, and zoo, is surrounded by lovely old homes, no longer threatened by the freeway that makes an abrupt detour at the park’s edge. By opening up the courts to hear the claims of citizens opposed to building the freeway through the park, the Supreme Court advanced administrative law and left several freeway ramps to nowhere overlooking downtown Memphis.

TVA v. Hill

The most infamous object of our pilgrimage was the Tellico Dam. As you approach the site in southeastern Tennessee, the most striking aspect of the scenery is that you seem to encounter a TVA dam everywhere you turn. When the Supreme Court stopped completion of the Tellico Dam to save the snail darter, an endangered fish living in the Little Tennessee River, TVA already had dammed up virtually every other water segment in the area. Later an appropriations rider snuck through Congress permitted the dam’s completion, but one can only wonder why upon seeing it. The Tellico Dam generates no electricity. It simply increases the water behind the adjacent Ft. Loudon dam, which is so close that you can see one dam from the other. TVA’s meticulous grooming of the water’s edge cannot entirely disguise the outline of what formerly must have been an incredibly beautiful stretch of river.

Georgia v. Tennessee Copper Co.

Just a short distance south of the Tellico Dam is Ducktown, Tennessee, site of a famous environmental controversy at the turn of the century. Two copper smelters located near the Georgia border spewed out so much sulfur dioxide that the area turned into a virtual moonscape. After the state of Georgia sued the companies, the U.S. Supreme Court issued an injunction that spurred the development of a new pollution control technology. The technology ultimately permitted the companies to develop a process for making sulfuric acid, the production of which has now become the major local industry. While copper mining and smelting have now ceased, the effects of the pollution nearly a century ago are still dramatically visible today, despite intensive reforestation efforts. A local museum chronicles the area’s rich history.

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Clinic Tackles Military Munitions, Lead Paint, Brownfields and Municipal Liability

The Environmental Law Clinic worked hard during the fall semester to advance its clients interests in a diverse series of controversies, from the regulation of military munitions as a hazardous waste to the prevention of lead paint poisoning, the reclamation of contaminated urban brownfields, and the protection of municipal government against the transfer of unwarranted environmental liability by Uncle Sam.

If it is possible to discern a common theme running throughout these difficult and complex matters, it is the reemergence of efforts to discount the severity of environmental problems so that existing laws and regulations will be weakened. The renewal of such efforts was sparked by the Republican Party's recapture of Congress for the first time in five decades. Even though moderate elements of the Party have an excellent track record on the environment, they are engaged in a power struggle with the Party's conservative wing, which believes that regulatory rollback is essential to secure America's economic future. To further muddy the waters, the Clinton Administration seems at times to join the conservative crusade, although in recent months, the President appears to have decided to make the environment a key issue in what many are predicting will be a watershed 1996 political campaign. It is, in short, a hard time to be an environmental attorney -- no matter who you represent.

Our ongoing efforts to contribute to the prevention of the number one environmental threat to Maryland's children -- lead paint poisoning -- shifted to a different forum this fall when we began to work with the Public Justice Center's Tenant Advocacy Project to counsel rent court clients about their rights under Maryland law, including the Lead Paint Prevention Program Act of 1994, which has yet to go into effect. Regulations implementing the law, due to make it effective by February 1996, are very weak from a tenant perspective and are the subject of a separate class action legal challenge brought by private attorneys from the law firm of Brown, Goldstein, & Levy on behalf of parents of vulnerable children. But rent court clients have other legal remedies available, including escrow and warranty of habitability claims, and we will represent them in these contexts as co-counsel to the PJC's Ann Refolo. The Clinic is also working on a manual that will explain the new law in plain English, for use by tenants, organizers, and
In an attempt to gain valuable "real world" experience in the area of environmental law, I chose the summer of 1995 to participate in the University of Maryland's Environmental Externship Program. I am glad I did so. My externship with the National Marine Fisheries Service, Office of General Counsel for Enforcement and Litigation (GCEL), provided an opportunity for me to gain valuable experience. I would highly recommend this externship to fellow students and other law students throughout the country.

On my first day at GCEL, I was assigned to cases that involved appeals of written warnings issued as a result of the violation of various United States fisheries laws. My job was to investigate and review the violation, and then decide to either expunge, uphold, or modify the written warning. The review and investigatory process led me to discussions with the federal agents who had issued the warnings, and, in some cases, the respondents who had appealed the warnings. After I decided the appropriate disposition in a particular case, I wrote a letter to the respondent notifying them of the agency's decision.

Another of my more interesting assignments involved trying to determine the current agency policy on asset forfeiture, seized during the issuance of a written warning. The agency's procedural regulations seemed to implicitly prohibit the seizure of property in cases deemed to be so diminimus as to only warrant a written warning. This prohibition, however, was not received very well by the attorneys and federal agents who were charged with enforcing these laws. This lead to the agency start rewriting and amending their procedural regulations to allow seizure of illegal items upon the issuance of a written warning.

Working with GCEL also allowed me to gain valuable experience in preparing a case for administrative hearing. A case was presented to me as a prime candidate to take to hearing before an Administrative Law Judge. The agency has a program that allows student externs to first chair a hearing while being assisted by a staff attorney. I worked on the development of this case, but was not able to push it to hearing before my externship was over.

Toward the end of my externship a problem arose that needed immediate attention. The Assistant General Counsel for Enforcement and Litigation requested that I draft motions for three cases that were remanded by the Fifth Circuit to the United States District Court, Eastern District of New Orleans. My task was to research the issues and write motions in support of a summary judgment in the first case, and a dismissal without prejudice in the second two cases. This assignment allowed me to work directly with the Assistant United States Attorney who was responsible for the cases and to discuss pertinent issues with the respondent's attorney. The motion for summary judgment has not yet been heard, but the two motions for dismissal were granted by the district court.

My externship was an experience that I will always value. It allowed me to gain "hands on" experience in environmental and administrative law, as well as allowing me the opportunity to make critical analytical decisions.
A Step Upstream, Pollution Prevention at EPA

by John Shoaff*

"An Once of Prevention is Worth a Pound of Cure" -- Benjamin Franklin

Pollution Prevention (P2) has its roots in conservation practices and the economic benefit from reduced industrial inefficiencies. EPA's official P2 program was established with the passage of the 1990 Pollution Prevention Act. 42 USC Section 13101 (1990). The Act identified P2 as "source reduction" and consequently identified it as the preferred approach of environmental management. Source reduction may include: technological equipment or process modifications, the reformulation or redesign of products, the substitution of raw materials and improvements in housekeeping. The Agency has since further developed and embarked upon a number of innovative programs to move upstream and prevent pollution at the source rather than at the end of the pipe. The following discussion distinguishes P2 from traditional environmental regulation, highlights a number of EPA's thematic P2 investments, and hypothesizes as to the future direction P2 and its relationship to future directions in environmental management.

The traditional environmental legislative and regulatory framework focuses upon single media (air, land and water) clean up. Although a need will always exist for the maintenance of minimum health and environmental quality standards, the single media post facto pollution approach is reaching its limits to provide environmental benefits at a reasonable cost. Pollution prevention can address these limits to traditional environmental protection by better serving the public with increased environmental protection at a reduced cost. P2 reduces risks by preventing releases or emissions. P2 is also advantageous in that it addresses cross-media shifts in pollution control (e.g. the result of cleaning up an air pollution problem may create a problem in violation of water quality standards). Often, through the prevention of such releases, a facility may experience increased operational efficiencies and realize cost savings. P2 thus contributes to reduced costs in the management and disposal of waste, improves operations and may enhance the public image of a facility.

Concurrent with the constraints and necessity of the traditional environmental regulatory framework, the Administration has emphasized pollution prevention as the "guiding principle to all our environmental efforts." In June, 1993 EPA Administrator Carol Browner released a Pollution Prevention Policy Statement which highlighted several themes and areas of investment for P2 in the Agency: regulations and compliance; state and local partnerships; public information and the right to know; private partnerships; federal partnerships; technological innovation and diffusion; and legislation.

Regulations and compliance represent the mainstream activity of the Agency and a significant opportunity to integrate P2 into such activities. Perhaps the greatest focus of this administration is the Agency's Common Sense Initiative where multiple stakeholders in six different industry sectors (printing, electronics and computers, auto assembly, metal finishing, iron and steel, and petroleum refining) are working to develop cleaner, cheaper and smarter approaches to environmental protection. This effort relates to similar reinvention efforts whereby alternative performance strategies, Project XL, are being identified with the incorporation of preventative approaches.

State and local partnerships have long been the focus of prevention efforts and the source of prevention innovations. EPA supports such programs with an annual state P2 technical assistance grants program. This past year, the Agency distributed grants to assist community based programs for environmental
justice through P2. P2 and flexibility language is also being incorporated into the Agency’s media grant programs and new state quasi-block grant initiative, Performance Partnership Grants. In addition, most states have their own P2 laws some of which have additional and more stringent requirements than that of the Federal law. The majority of states require pollution prevention planning of industrial facilities that meet or exceed certain classifications. While most of the state planning laws require some reporting or on-site filing of plans, plan implementation and reporting progress is not always required.

Providing public information and the right to know has been facilitated predominantly through the Toxics Release Inventory (TRI). The list of chemicals to be reported under TRI has recently expanded and a materials accounting or chemical use tracking phase has been proposed. A P2 Information Clearinghouse also contributes toward this priority as do product and consumer based initiatives.

Private and Federal partnerships represent the foundations of EPA’s prevention program. Voluntary programs, in particular the 33/50 program, created a new voluntary approach to achieve desired environmental improvement. Rather than prescribing methods to reach a standard, the 33/50 program identified a reduction goal (33% by 1992 & 50% by 1995) for target chemicals and allowed willing industry partners the flexibility to choose their own methods to achieve those goals. Since 33/50, a variety of voluntary programs have sprung up around the Agency. The Design for the Environment (DfE) program is a similar initiative where EPA works directly with companies to encourage P2 in the design of their products, processes and management systems. Hence, DfE projects are working not only on specific technological designs, but also accounting methods that consider, track and measure the environmental consequences of a business and its operations.

Federal partnerships are important to utilize and coordinate public funds in the best manner possible. P2 is of particular importance as Federal facilities are no longer exempt from the environmental requirements to similar private facilities. Also, the purchasing power of the federal government is being utilized to stimulate demand for environmentally preferable products. Such products may have a lessened environmental burden at the end of their useful life as well as contribute to operational efficiencies and cost savings during their product life.

Technology innovation and diffusion in the environmental sector have been targeted as business opportunities and strengths of American competitiveness. The Environmental Technology Initiative seeks to enhance these goals and has set aside support to focus upon P2 projects.

EPA, while busy proceeding within the traditional legislative and regulatory framework, is re-examining its approaches and is investing in pollution prevention. This focus, in part points to some of the near-current and future emphases of environmental management which include: pollution prevention with the flexibility to address cross-media problems; voluntary initiatives and partnerships; enhanced public information and access to information, community-based programs; sector-based, reinvention and alternative performance-based strategies. Further down the road, we may see P2 reach its natural and feasible limits as costs savings and environmental protections are once again realized. The next model may be to better incorporate the lessons and objectives of P2 into sustainable development, the utilization of environmental performance as a competitive advantage, and personal choices and consumer behavior with regard to the environment. While priorities and programs shift, the workload is static. The American leadership may not always agree, but together, with the public support and interest, there will always be a demand for the protection of human health and the environment and an investment in the best known way to achieve that objective.

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I remember that day in late March 1989 as if it were, well, almost seven years ago. I listened with interest as Professor Robert Percival told me about his friend and former colleague, Alan Miller, who was about to secure a grant from U.S. EPA's Office of Air and Radiation. The proposed request for nearly $2 million would support a new policy research group on atmospheric environmental issues to be based at the University of Maryland at College Park. I barely knew what that meant, but I was intrigued at the possibility of doing something academic and nongovernmental, and on being in on a new venture from its inception. And visions of Terp basketball danced in my head.

While I had been holding out for a job outside private practice, I didn't see much likelihood of capturing a position dealing with international environmental issues. Except for a recently completed article on the international treaty to phase out ozone depleting chemicals, my environmental credentials were minimal. All of my professional experience prior to law school had focused on telecommunications. Most of my jobs during law school, including an Asper Fellowship at the Maryland Public Service Commission and both summers in D.C. at federal communications practices, had sought to build upon this background.

But from Bob [Percival], I knew that his friend Alan Miller had worked on a variety of environmental and energy issues. While at the Environmental Defense Fund in the early 1980's, Bob had collaboratively responded with Alan, who was with the Natural Resources Defense Council, to a Department of Energy publication entitled Electricity in America's Future. And here was Alan beginning an international policy group -- that sounded like someone who could appreciate diversity to me! So instead of worrying about my lack of special expertise, I decided to focus on my successes in the highly technical field of telecommunications. I figured if I could learn how a cellular phone worked, I could comprehend global warming! Of course, when contacting Alan, I was honest about my limited direct experience -- I had taken only two relevant classes in law school, Environmental Law and a Regulatory Law Workshop. But for the latter I had participated in a zoning proceeding that addressed the environmental effects of radio transmission towers, and so I stressed the linkages between my background and the environment. In the end, I think it was the case I made for my broad understanding of regulatory and administrative practice that inspired Alan to give me a chance.

I write these words from my office in College Park, remembering how desperately I wanted the job, but confessing that at the time, I understood precious little about what international environmental policy was about, what Alan was seeking to do with his new Center, or the challenges of working in public interest. Like every law student, I had heard the old adage about the order in which a lawyer should present arguments in a case. First argue the facts, then the law, and when all else fails, argue policy. But what did that mean in real life? Especially in the international realm, where what little law that exists is "soft," meaning that enforcement is weak or nonexistent.
Countries don't follow rules they don't agree with, and they can't be put in jail. Countries did not comply with the 1987 Montreal Protocol on Substances that Deplete the Ozone Layer because they feared the chlorofluorocarbon police. Rather, they participated in an international environmental regime because it was based on sound science, recognized the equity concerns of countries with less technical and economic capabilities, and facilitated development of technological alternatives instead of simply mandating change.

What I've come to learn in the past seven years or so is that international environmental policy encompasses many things. It can include overall international agreements like the Montreal Protocol, or more recently the Framework Convention on Climate Change and the Convention on Biological Diversity. Or it can entail the evolving national and subnational regimes that give effect to these agreements. I have been fortunate to be at a unique institution like the Center for Global Change, a university-based, nongovernmental policy research group that neither litigates nor lobbies. While raising our own funds is a continuous challenge, our collaborations are diverse - federal and state governments, private foundations, the World Bank, the U.N. and other international institutions -- and I have been able to explore a range of legal, institutional, economic, moral and technical issues on the international, national and local levels that constitute "climate policy." I may not have developed the special expertise that I thought was so necessary to land this job, but I am learning quite a bit about the complex process of fashioning international policy and influencing national changes to effect it.

In the case of the Climate Convention, to which I am an accredited nongovernmental observer, the international process consisted of six negotiating sessions which resulted in a treaty. The Convention which entered into force in March of 1993, lays a framework for stabilizing atmospheric concentrations of certain "greenhouse" gases, primarily carbon dioxide, which trap heat at the Earth's surface. A recent international report written by over 300 scientists from all over the globe concludes that there is little doubt that human activities are changing and will continue to change the composition of the Earth's atmosphere. If atmospheric concentrations of these gases continue to rise, scientists predict impacts that include temperature changes on land and in the seas, increased extreme weather variability, and sea level rise.

But negotiating a global agreement on how countries will cooperate to protect the global atmosphere entailed a great deal more than judging the reliability of the scientific theory behind greenhouse warming. The primary greenhouse gas, carbon dioxide, results from the combustion of fossil fuels -- oil, coal, and gas -- and thus underpins virtually every economic activity. Thus, the historical buildup of greenhouse gases in the atmosphere is primarily the result of industrialization in the rich, developed countries of the "North."

If reducing emissions of greenhouse gases in rich countries would protect the atmosphere, "fixing" the greenhouse problem would be simple. But because of population growth and predicted industrialization in China, India, and many countries in Southeast Asia and Latin America, emissions from countries now thought of as "developing" will, within the next decade or so, constitute a much larger share of total global emissions. Naturally though, developing countries have resisted any attempt to limit their
future emissions as they see increased use of fossil fuels as crucial for economic development. According to developing countries, the world faces potential problems with the climate because of energy over-consumption and waste in the North. Unfortunately, the impacts of climate change -- for instance, on agriculture, forest cover, and water supply -- are likely to have far more adverse consequences for developing countries which depend more on natural systems, whose infrastructures are more vulnerable, and who have fewer economic resources with which to adapt or respond to rapid changes. So simply pointing to the North’s historical responsibility, while legitimate, won’t mitigate future problems expected for the developing world.

Possibly more difficult than constructing the international framework to reflect both historical and future accountability is the ongoing process of translating the treaty into specific national commitments, including the allocation of financial responsibility to assist developing countries incorporate global priorities into their national development goals. I have been involved with the evolution of regimes to effect these changes at two critical junctures: international financial mechanisms and the state and local policy development process, particularly in the U.S. and German energy sectors. It is in these arenas that I have been immersed in issues and processes of a number and variety that I never imagined to be part of international environmental policy.

On the international level, I have assisted in shaping the Global Environment Facility (GEF), an institution created in 1990 by developed countries and administered by the World Bank and the United Nations to finance projects in developing countries that further global environmental priorities. In late 1993, I cooperated on an independent evaluation of the GEF’s pilot phase, assessing the World Bank investment project portfolio and subsequently served on a steering committee to bring about the reforms suggested by the evaluators. This October, I joined NGOs from around the world in responding to the GEF’s revised operational strategy for elaborating its priorities and selecting projects. I have also contributed to EPA and the UN on amplifying the concept of “joint implementation” (JI), another financial mechanism intended to promote activities that reduce emissions of greenhouse gases. JI is controversial because it allows developed countries to take credit for emissions reducing activities financed in developing countries. Last December, I helped organize a workshop in Nairobi where 40 African decisionmakers explored how JI could be used to further national development goals.

In the U.S., my work has focused on promoting ways in which state and local governments can benefit from acting in ways that also benefit the global environment. States and cities have authority for many of the activities that affect greenhouse gas emissions -- electricity production, building codes, transport and land use policies -- but few local actors are well informed about international treaty commitments. I have worked with legislators and regulatory personnel, and assisted with review and implementation of the U.S. Climate Change Action Plan, an inventory and strategy for stabilizing emissions as required under the treaty. One of my favorite projects relating to local policy development was writing a model ordinance to facilitate installations of ground source, also known as geothermal, heat pumps. Geothermal technology, slated for advancement under the U.S. Plan, is energy saving and highly economic, but as most things new and complicated, calls for education and guidance. The model ordinance is an attempt to elucidate the environmental and design issues so that local decisionmakers can feel comfortable supporting the new technology.

That the model ordinance was among my favorite projects should be a surprise, because it is somewhat more applied than the analysis and idea development that I conduct typically. But it is something I can point to easily when confronted with the always-asked question about whether, as a policy analyst, I ever use my law degree. The question is misplaced -- but understandable. I have come to appreciate the fact that it is not entirely evident just how fascinating and far-reaching the notion of international environmental policy can be.

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The Impact of A Policy Change On EPA Enforcement Actions

by Jonathan D. Libber*

In the last ten years, there has been a dramatic rise in civil penalty assessments in EPA enforcement actions. From fiscal year 1977 through fiscal year 1984, the total amount of EPA civil penalties averaged about $6 million per year. In fiscal year 1985, that number shot up to $23 million. By fiscal year 1988, the total annual amount had risen to $35 million and those numbers continued to rise until in fiscal year 1994, the penalty numbers topped the $100 million mark. The statutory authority to seek substantial civil penalties was in place by the late 1970s, yet it was a policy change that was responsible for a large portion if not most of this increase. That change was seeking the recapture of a violator’s economic savings in all enforcement actions where EPA sought a civil penalty.

Background

By the late 1970s EPA had the authority to impose substantial civil penalties in what was then its four major statutory programs: Clean Water Act, Clean Air Act, Toxic Substances Control Act, and the Resource Conservation and Recovery Act. But while there was extensive enforcement activity in the late seventies and early eighties, the EPA’s total civil penalty assessments reached the $10 million mark only once during that period. The average for FY 1977 through FY 1984 was only about $6 million per year.

The EPA began considering the violator’s economic benefit from noncompliance starting with the Civil Penalty Policy of April 11, 1978. This policy, which applied to certain Clean Water Act and Clean Air Act violations, directed enforcement personnel to apply a complex formula to determine the amount of economic benefit. The Agency later replaced this formula with a hard to use computer model, CIVPEN. The 1978 penalty policy also permitted EPA enforcement personnel to quickly compromise this economic savings figure. Thus, EPA enforcement actions rarely recaptured the violator’s economic savings. In addition, the overly complex computer model fell into disuse. While the effort to address economic savings in the civil penalty was laudable, it did not succeed in becoming a permanent feature of EPA’s penalty assessment process.

Six years later, EPA went forward with a second attempt to address the violator’s economic savings from noncompliance. The Office of Enforcement and Compliance Analysis issued a generic civil penalty policy on February 16, 1984. In that policy the EPA sought, among other things, to make penalties more consistent, fair, and predictable. To that end, the policy stated that the EPA’s position in all civil penalties was to recapture any savings the violator obtained through noncompliance. To support this change, the policy offered a fairly simple formula to use in calculating such benefits, and committed the Agency to coming up with an improved and simplified computer model to perform the calculation. The Agency fulfilled that commitment in November 5, 1984, with the introduction of the BEN computer model.

Impact of the Policy Change

What did the 1984 penalty policy really change? EPA already had the statutory authority it needed to obtain substantial civil penalties; the Agency did recognize the importance of considering the economic benefit of noncompliance; and there were medium-specific civil penalty policies in place in the water, air, toxic, and pesticides programs long before 1984. My observation is that the policy change’s primary impact was psychological.

The biggest impediment to seeking substantial civil penalties was not, as many think, management interference or lack of management support. What held most of our enforcement staff back was a lack of confidence in the penalty figures generated by our civil penalty policies. Our enforcement professionals were essentially uncomfortable seeking large civil penalties based solely upon an application of the above mentioned medium-specific penalty policies. Once they were required to recapture the benefit of noncompliance, they easily discovered through the BEN model what the violators were saving by violating the law. Then the enforcement staff realized
that the violators would end up making substantial amounts of money from their violations unless they recaptured the economic benefit in the civil penalty. EPA enforcement professionals were no longer uncomfortable seeking substantial civil penalties, and they started negotiating much more assertively.

To be sure, the Agency’s consistent use of penalty policies had already produced a significant degree of objectivity in penalty assessments by 1984. But the implementation of the recapture requirement along with the introduction of the BEN model produced a high degree of objectivity that greatly enhanced the confidence EPA enforcement professionals had in their penalty calculations. Such confidence translated itself into a greatly enhanced civil penalty program.

Interestingly, increasing the size of civil penalties was not one of the stated or unstated goals of the 1984 penalty policy. In fact, the Agency was essentially unaware of the dramatic increase in civil penalties until it conducted a study of EPA penalty assessments in 1988. There were of course other factors at work that probably helped bring about this result such as changes in case selection considerations and penalty policy revisions. In addition, the changes in enforcement perspective that resulted from the departure of former EPA Administrator Anne Burford and the return to the Agency of former EPA Administrator William D. Ruckelshaus in 1983 also began having their full impact in fiscal year 1985. But if the adoption of the benefit recapture provision did not directly produce these spectacular increases in civil penalties, it at least facilitated it. What this clearly illustrates is how subtle changes in enforcement policy can have a major impact on EPA’s enforcement program.

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Sand swallows dart above a mountain of white which sits solid against a graying winter sky. Two snow covered pines frame the picture window -- a stopping point for cardinals and rabbits. An odd little woodchuck named Walt Whitman has a curious habit of running over my feet as I leave in the evening. This ideal office is not located at a pristine nature preserve -- I work at a landfill in the New Haven area of Connecticut. While I never aspired to gain the coveted mahogany desk and harbor view, my present location was not in my five year plan upon graduation from law school.

*Audubon, Natural History and Sierra Club* magazines are now supplemented by *Demolition Age, Waste World and Waste News.*

The Tire Pond

Fantasies of ensuring secure wetlands and clear water for migrating birds are overwhelmed by what to do with tires and demolition debris. Trash hauler wars have been waged in New Haven by the New York and Providence crime families and many of my conversations sound better suited for *Guys and Dolls.* Knee deep in solid waste issues, I have found a niche where I still have an opportunity to protect habitats for flora and fauna.

The Tire Pond

The subject of this discussion is a unique impoundment called the Tire Pond, located on an approximate 120 acre site which also accommodates a construction and demolition business and bulky waste landfill. The property abuts the Quinnipiac River, a class SC water body, and straddles two towns in an industrial area. Because of the rich clay soil, the land supported a brickyard from the mid-nineteenth until the mid-twentieth century. Large and deep pits were created by the extraction of clay and when the brickyard was closed, a prior owner filled a forty-two acre, hundred and forty foot deep pit with water from the river. In the 1970s, the adjacent property was used as a bulky waste landfill and the present owner, with an eye on the potential for recycling, began using the pond as a storage area for tires. This imaginative approach to a nationwide waste problem started in 1977 and has been followed by 18 years of
bureaucratic short-sightedness. After multiple attempts and failures to attain the magic number of three state, four municipal and one federal permit while at the same time battling agency incompetence, the Tire Pond is closing for business as of December 31, 1995. The State of Connecticut and two towns have lost a singular opportunity to utilize an industrial zoned parcel of land for a model multifaceted recycling park.

**Federal Considerations**

The designers of RCRA understood that tires were a particularly difficult type of waste to collect, transport and dispose. Placed in municipal solid waste landfills, they take up an extraordinary amount of space and continually work their way to the surface. Bulky waste landfills offer no better solution and at these sites, tires act as fuel for inevitable underground fires. In addition, tires destabilize the land, making it impractical for future reuse.

Section 6914 of RCRA made available grant money specifically earmarked for encouraging shredding and recycling tires. Unfortunately, in the late 1970s, a strong market had not yet developed for used tires. Third world countries were and remain a solid market for such tires in decent condition where they are regrooved and resold. Unusable tires are recycled into footwear, retaining walls and recreational swings. Without strong U.S. markets, however, only a few entrepreneurs were interested in shipping tires out of the country. In the 1950s, 60s and 70s far more tires were recapped for reuse domestically because of the low mileage expectancy (@ 10,000 miles). Later, radials tripled the wear mileage and dramatically reduced the market for recapping.

Recently a number of markets which utilize tires have opened in the U.S. Shredded tires provide fuel for several industries and some tire-to-energy plants; finer crumb grades serve as an additive to asphalt to strengthen road surfaces and running tracks, and tire rubber mixed with other recyclable substances are molded into car stops and railroad ties. For many years several states, including Maryland, have used tires as artificial reefs and aids to reviving suffering shellfish populations. Many studies have been conducted to demonstrate that tires do not leach harmful substances when placed in water. (In fact, the water quality of the Tire Pond is superior to that of the adjacent river.) A profitable recycling business, however, requires the storage of tens of thousands of tires where they can be easily retrieved, yet remain relatively safe from fires and vectors such as mosquitoes and rodents.

The Department of Energy (DOE) contracted with scientists at the Idaho National Engineering Laboratory to investigate the feasibility of using scrap tires for pyrolysis (oil extraction) and other technologies. The 1983 study remains relevant as to the generation and uses of scrap tires. The study estimated that a tire per person per year is relegated to scrap in the United States -- thus, in excess of 250,000,000 tires become part of the waste stream annually. Collection and transportation of scrap tires is only the beginning of the problem. Years ago tire jockeys would travel among the small establishments and cull good tires for resale. Stockpiling these reusable tires began to pose a problem as federal, state and local environmental laws imposed stricter compliance. As there is precious little money in tire jockeying, it was not in many of these dealers interest to go through a lengthy and expensive permitting process for what they saw as picking through junk.

Larger companies saw the benefit of removing good tires from the waste stream for reuse and began to replace the jockeys. Not only was there money to be had in resale to third world countries, but the metals from de-rimming the tires also provided a substantial additional income. The difficulty that has been encountered is that a large amount of space is required for a profitable culling operation and the problem remained as to what to do with the remaining scrap tires. Some tires not shredded for fuel can be shipped whole to certain tire-to-energy plants, but only if they are non-commercial, de-rimmed and clean. An economical method of pyrolysis has not yet been developed. While the Idaho study reveals that a year's worth of scrap tires would produce approximately 0.16% of the annual national consumption of barrels of oil (@ 23,800 barrels per day), the present cost to extract such a valuable resource is too expensive to make pyrolysis feasible. The DOE, however, is fully aware of the location of all the major stockpiles of tires should processing become more economical or another oil crisis dramatically increase the cost of crude oil.

Currently, the Connecticut and similar tire-to-energy plants will not take in commercial, filled or burnt tires. The Idaho study estimates that there are approximately 40,000,000 commercial tires
scraped annually. Because small entrepreneurs have developed other technologies utilizing scrap tires, the waste problem should not look so dismal. Besides capital investment, what these businesses need are legislative and regulatory encouragement -- neither appear to be forthcoming. For instance, on November 28, 1995 President Clinton, at the behest of state departments of transportation, signed a bill repealing the mandated use of rubberized asphalt for road projects which are federally funded. States continue to bemoan waste problems, but often are unwilling to implement creative solutions. Unfortunately, in Connecticut, state and local regulators have placed unreasonable roadblocks in the way of many environmentally friendly businesses.

State Considerations

As well-intentioned as the cradle-to-grave legislation may be, overall protection of the environment ultimately may be hampered by ill-drafted state statutes and regulations and uncooperative state agencies and town officials. While RCRA does not necessarily preempt state and local laws (City of Philadelphia v. New Jersey, 437 U.S. 617 (1978)) and states may regulate more stringently than RCRA (Old Bridge Chemicals v. New Jersey Department of Environmental Protection, 965 F.2d 1282 (3rd Cir. 1992)), state and local laws must be consistent with the intent of RCRA and not violate the Commerce Clause.

Connecticut reacted to one of its more infamous trash dilemmas by over-regulating the solid waste industry. At first blush, the restrictive legislation looks as if it would effectively control the disposal of solid waste outside of permitted facilities if the law were evenly enforced. Connecticut General Statute 22a-207 defines disposal as meaning "the placement of material at a location with the intent to leave it at such location indefinitely, or to fail to remove material from a location within forty-five days." The forty-five day restriction, however, dramatically inhibits certain businesses' recycling efforts. In the scrap tire industry, more than forty-five days may be needed to cull and de-rim tires. The same can be said for the demolition industry where aluminum, wood, plastic and steel can be retrieved and sold. The result of such restrictive regulation is needless landfilling of recyclable items -- in direct contradiction of the intent of RCRA.

With regard to the Tire Pond, the state has exercised all of its might to prevent it from operating. Initially the owner was told that he needed a water permit to operate. He argued that a solid waste permit was more appropriate, but lost the argument at the administrative hearing. The Tire Pond operated with a water permit from 1981 until the present. In 1984, however, the state determined that what was really needed was a solid waste permit. It would be easy to claim bureaucratic incompetence, but review of the state files reveals that the permit pirouetting was intentional. From 1984 until 1992 several expensive applications were submitted to both the state and two municipalities with no success. After approximately $75,000 in engineering fees and substantial legal costs, it was clear that no permit would be issued.

The state has issued two cease and desist orders against the Tire Pond within the last year and rescinded them for what amounts to sloppy drafting and process. Further, for a cease and desist to issue, the state must allege that imminent and substantial harm exists -- it could not. On November 8, 1995 the state attorney's special police force swooped in with the EPA criminal enforcement and the state Department of Environmental Protection (DEP) for a mini-Waco drama. Connecticut and federal agencies notified the media to be on site and leaked suspicions of scary materials which may have been found. It has been two months since the invasion and the state has issued no enforcement action. Even the most sophisticated test on samples taken from the Tire Pond only takes eight days. The media has a short attention span -- apparently no one was interested in following up with the state.

Not capable of issuing an order that could withstand court challenge, the state used the two towns to continue the offense. Both towns simultaneously issued cease and desist orders against the Tire Pond. What seems disingenuous about their posturing is that state agencies, including the DEP, and both towns have been sending their tires to the pond for years. While everyone was looking at smoke and mirrors of a not too well orchestrated raid, the DEP, through the towns, achieved its long-term goal of closing the Tire Pond. By terminating the intake of tires at the pond, the DEP was able to facilitate the diversion of tires to the state bonded tire-to-energy plant.
Conclusions

What has Connecticut accomplished through its stonewalling and staged media events over the past decade? Instead of working with a small business through the permitting process in order to solve a waste problem, the state has succeeded merely in shutting down a safe and clean disposal facility. By failing to address a permit application and two years of written requests, a Tire Pond subsidized rubber mat facility which employed only handicapped adults was closed. An unfriendly permitting process has discouraged rubber recycling small businesses from taking root where millions of tires are stored.

The forty-two acre site is partially filled and capped. Open water remains in one town but serves as a nesting area for swans and ducks. The Audubon Society continues to hold its annual Christmas bird count at the Tire Pond and its members have, in the past, sighted a rare species of duck paddling among the tires. Sixty-eight municipalities, including the two towns which helped bring an end to the pond, are now discovering that they have a tire collection and disposal problem as of the end of the year. Perhaps when whole tires and scraps begin appearing again by the roadsides, in streams and the Long Island Sound, someone will have the sense to see the value of the Tire Pond.

*Maureen ODoherty is a 1993 University ofMaryland School ofLaw graduate and is a principal in the environmental lawfirm of ODoherty & Mendel in New Haven, Connecticut. She serves as environmental counsel to the owners of the Tire Pond.

Clinic Tackles Military Munitions

cont. from page 4

their attorneys when and if the law becomes effective.

Brownfields are land in the inner city contaminated by past toxic waste disposal that cannot be redeveloped until they are cleaned up. In recent months, interest has grown in Baltimore City and throughout the state to reform Maryland’s Superfund law to make it easier for developers, lenders, and other businesses, to reclaim such property, furthering urban economic revitalization and preventing suburban sprawl. The proposals for reform raise fundamental questions about the future of Maryland’s Superfund program, which recently received responsibility for dozens of new sites when EPA announced that they had been removed from the federal Superfund list. The Clinic is working with the Department of Legislative Reference of the Maryland Assembly and Senator Brian Frosh to provide research and legal support during the Senate consideration of the bill, and we have already prepared a briefing book and an analysis of other state brownfields laws for the legislature’s consideration.

Last but not least, we continue our work for the Howard County Attorney’s Office, this fall in the context of a possible transfer to the County of title to federal property that may be heavily contaminated with military wastes. As America closes military facilities throughout the nation, many such transfers to municipal governments are pending, raising a series of complex issues concerning which unit of government will assume future liability for damage to the environment and public health, as well as cleanup costs. We have provided the Howard County Attorney with several research memos on these issues, and hope to continue to collaborate with our client as the negotiations unfold.

The clinic operates as a small public interest law firm providing representation to its clients on a year-round basis. The Clinic includes between 8-12 students, and their supervising attorney and professor, Rena Steinzor. In the fall of 1995, Susan Schneider, a senior attorney on leave from the Department of Justice, directed the Clinic, consulting closely with Professor Steinzor, who was on research leave. Professor Steinzor is now back at the Clinic full-time and welcomes any thoughts or suggestions from University of Maryland graduates or other readers about the work that the Clinic does.
Maryland Environmental Law Society (MELS)  
Continuing the Green Drive

by Brian Perlberg*

The Maryland Environmental Law Society (MELS) continues to be one of the most active student groups at the law school. In the Fall 1995 semester, MELS was able to expand upon previous successes and forge new links. Success starts with the solid support of the Environmental Law Program and core group of five officers. One of the most encouraging aspects has been the enthusiasm and energy of new members. An ad hoc green network has been established, in which students interested in environmental law know and can rely on each other for support. Further, MELS has made a conscious effort to include all students interested in environmental law and not a particular ideology.

Our first event featured a presentation by University of Maryland School of Law alumnus, Ali Alavi. Mr. Alavi is now the Assistant General Counsel for Clean Sites and ambassador for the ABA Section of Natural Resources Energy and Environmental Law (SONREEL). He shared how students could utilize the ABA and SONREEL in furthering their education and careers in environmental law. Also, Mr. Alavi shared his career experiences as an engineer in the military and how different professional prospective affect environmental law practice.

MELS organized debates on Private Property Rights or “Takings” legislation and Criminal Enforcement of Environmental Laws with the Federalist Society. The “Takings” debate featured Assistant General Counsel of Maryland Ralph Tyler arguing against “Takings” legislation and Dr. Roger Pilon of the CATO institute arguing in favor of “Takings” legislation. The debate was timely and hotly debated. Further, the debate led to articles in The Raven, the law school newspaper.

The debate on the Criminal Enforcement of Environmental Laws pitted U.S. Assistant District Attorney for Maryland, Jane Barrett arguing for criminal enforcement against Timothy Lynch of the CATO institute arguing against enforcement. Dean Donald Gifford and Professor Robert Percival served as moderators for the respective debates.

MELS also held its annual Environmental Dinner on the topic of Tort Remedies Due to Increased
Ali Alavi of Clean Sites speaks with students about environmental opportunities

Health Risks from Environmental Wrongs. The panel discussion included Macy Nelson, a plaintiffs lawyer, Ian Gallagher, a defense attorney and Catherine Squibb a toxicologist, and Professor Bob Percival moderated. The event was co-sponsored by the Student Health Care Organization (SHLO) and was highly successful despite bad weather. The discussion on this cutting edge topic was intriguing, especially since some students in attendance had done extensive research on this topic. The lasagna dinner was not bad either.

MELS is also proud of its tradition in purchasing Sulfur Dioxide (SO2) pollution shares. We were the first law school to purchase SO2 funds and have launched a national effort to recruit other schools to partake in this worthwhile effort. The response has been very positive. Next year, we plan to include undergraduate environmental groups.

To raise funds, MELS held two bake sales that were among the highest revenue generating sales of all-time. We have already made enough to purchase five tons of SO2 with matching funds from the Student Bar Association.

Increasing the recycling at the law school and the entire University of Maryland at Baltimore Campus has been on the MELS agenda. Efforts with the administration and with the support of the Student Government Association should lead to more materials to be recycled. Also, MELS is encouraging student groups and professors to reduce paper use by making double sided copies strips of papers rather than full sheets.

MELS has also initiated a “Green Adventure” series, which is designed to give students a chance to appreciate the outdoors and break-up the monotony of law school. Last semester a trip to take a free canoe trip of a lake in Upper Marlboro Maryland and fish out trash was organized.

Other MELS activities include sending a team to the Environmental Law Moot Court Competition at Pace University; National Environmental Negotiation Competition at University of Richmond; attending the National Association of Environmental Law Societies Conference. MELS also compiles environmental law related pieces and publishes them in a section in The Raven, entitled The Leaf.

*Brian Perlberg is a second year law student and President of the Maryland Environmental Law Society (MELS).
Environmental Protection in a Former Communist Country: The Case of the Slovak Republic

by Karin M. Krchnak

One of many scenic hiking trails in Slovakia's High Tatras.

While teaching introductory environmental law at a one-year graduate environmental program in the Slovak Republic, I decided to let my students play a game similar to the one I had played as a student in the Environmental Law Clinic at the University of Maryland. In the game, students are divided into groups representing industry, environmental non-governmental organizations (NGOs), and community associations. Each group is given a certain amount of money and specific parcels of land, as marked on a makeshift map. To build a factory, establish a nature reserve or build a housing development, the students needed a set number of parcels. For several hours, I let them bargain among themselves. At the end of the class, I asked all of the groups to describe the trades they had completed and how the land was allocated. Two of the students representing an environmental NGO announced to the class that they had not bothered to trade with the other groups; instead, they had decided to embezzle the money from the NGO for personal use.

The economic difficulties associated with a transition from a centrally planned economy to a capitalist system will naturally overshadow environmental protection concerns. When this is compounded with a shifting and arguably non-democratic form of government, the environment receives even less attention. It is relatively easy for countries to call for the downfall of communism; it is an extremely complicated matter to transform a nation of people accustomed to full employment and free health care into one in which some level of unemployment and uneven distribution of income is an accepted way of life. It was no wonder that many people in Slovakia would sit with me for hours and explain how they "longed" for the former socialist system. Only a handful of people have profited from the privatization of large state industries; most individuals must survive on wages of approximately $180 per month.

Past and future environmental degradation, however, is not something which countries such as Slovakia can afford to ignore in the long term. The World Bank recently reported that approximately 30,000 people die each year in Eastern Europe as a result of industrial pollution. Although the Slovak Republic has made substantial progress in developing an environmental protection system since the fall of communism in 1989, implementation and enforcement remain relatively weak. The difficulties in establishing a comprehensive enforcement system should not be underestimated. Laws which had been enacted under communism governing such matters as forestry, water management, and soil protection were void of regulation prior to 1990. Since waste was dumped in random locations, often near rivers, for several decades, municipalities and other producers of waste are faced with few inexpensive options to manage their waste problems.

Under communism, state administration in the former Czechoslovakia included sections responsible for a wide array of issues, including health, education, and
the environment. While struggling with the fall of communism, governmental officials in the former Czechoslovakia decided to separate environmental protection from other ministries, making it independent of the general state administration. A state administration system for environmental protection was created, comprised of the Ministry of Environment, district environmental offices, sub-district environmental offices, and the State Environmental Inspectorate. Laws on air, water, and waste were enacted in fairly rapid succession in the period from 1990 to 1992. Since many of the large, socialist enterprises suffered from outdated equipment and technology, provisions were included in each of the sectoral laws to allow existing sources grace periods to gradually come into compliance with the stricter standards applicable to new sources. The laws impose fees on pollution sources for air emissions, waste water discharge, and waste disposal. In cases of noncompliance, provisions authorize environmental officials to assess fines against violators. Funds collected from fees, fines, and several other sources are deposited in the State Environmental Fund. These monies are then distributed in the form of grants for various projects, such as the construction of sewage treatment plants, landfills, and water supply networks.

Despite the substantial progress made during the past five years, the environmental protection system is far from complete. Shortcomings include a lack of implementing regulations in some sectors, outdated administrative procedures, and the distribution of State Environmental Funds in a manner that fails to motivate industry to comply with environmental obligations.

Slovakia, like its former communist neighbors, lacks the financial means to resolve all of its economic, social, and environmental problems in the short-term. Alternatives which are not costly but which streamline the process need to be seriously considered. This does not mean, however, that decisions should be implemented which would undermine five years of progress. Various coalitions have at times called for centralization of the environmental protection system for financial reasons, despite the fact that this would result in environmental officials losing a substantial degree of autonomy. Instead, such measures as integrated permitting, increased reliance on self-monitoring and reporting, and more effective distribution of enforcement powers offer the possibility of protecting Slovakia's environment without imposing inordinate costs on the State or industry.

Regardless of the approach adopted, difficult decisions must be made. In a country with a rich heritage of nature protection, officials are currently grappling with the question of how to compensate persons reclaiming family property seized by the communist regime in exchange for restrictions on claimants' use of the land in order to maintain the land as a nature reserve. A new Act on Nature Protection, enacted in 1994, replacing one dating from the 1950s, is one step in this process to protect and preserve Slovakia's beautiful national parks.

In light of the fact that citizens did not have a voice under communism, public participation in environmental decision-making remains a sensitive issue in many Central and Eastern European countries, including Slovakia. Although the Slovak Constitution guarantees everyone the right to a healthy environment as well as information on the state of the environment, the Slovak Ministry of Environment is still trying to develop a law governing access to information. The Environmental Impact Assessment Act, which came into force on September 1, 1994, makes citizens an integral part of the EIA process. However, since the final decision on a project is not binding on the permitting authority and public participation in the permitting process is severely limited, the role of Slovak citizens in effecting change is still weak. With relatively few environmental lawyers or NGOs, environmental awareness needs strengthening.

No clear roadmap exists for Slovakia, or for other former communist countries, on how to raise the standard of living, replace old-style economic policies with capitalism, and overcome 40 years of resource-intensive development. Considering that Slovakia hopes to join the European Union in the next decade, it is critical that not only democratic reform but also environmental protection receive high priority. A chapter devoted entirely to environmental protection in Slovakia's first democratic Constitution is a significant achievement. Hopefully, Slovakia will be able to move beyond the political in-fighting and work towards developing the rule of law.

* Karin Krchnak, a native of Slovakia and a 1993 graduate, worked in Slovakia as a consultant on a project for the Environmental Law Institute and taught at Academia Istropolitana. She is currently a consultant to Science Applications International Corporation in McLean, Virginia.
Assessing the Risks of Endocrine Disruption
by Suzanne V. Jacobson*

Background
Humans have long been concerned about the potential harm to health from exposure to poisons and pollution. Records dating further back than 1500 B.C. indicate ancient man was aware of the toxic effects of animal venom and poisonous plants. Following a period during which some women conspired to poison their husbands and profit from their untimely deaths, Sulla in 82 B.C. issued Lex Cornelia, believed to be the first law against poisoning which later became a regulatory statute. In recent history, risk assessment has become very important in making regulatory decisions under the environmental laws. Risk assessment is, in part, based on the identification of hazardous chemicals using toxicity tests with restricted endpoints such as acute mortality, mutagenicity, and carcinogenicity. It is now becoming apparent, however, that risk assessment techniques overlook other potentially important health effects. The purpose of this article is to discuss the growing realization that current risk assessment practices fail to adequately address toxicant effects on the immune and endocrine systems.

Immune System Effects
Evidence of the adverse effects of substances on the immune system began accumulating in the late 1970s and the spurred the expanding field of immunotoxicology. Immunotoxicity has not been used as an endpoint in risk assessment primarily because sensitivities for that endpoint and reliable and relevant testing methodologies were not established at the time guidelines for risk assessment were being developed. However, in the early 1980s, the National Toxicology Program (NTP) which is supported by EPA and the National Institute of Environmental Health Sciences (NIEHS), began to develop and validate a panel of (a) basic, rapid screening protocols and (b) advanced, comprehensive tests to assess the adverse effects of chemicals on rodent immune function and host resistance. The database currently consists of 51 chemicals. Clearly, there is now a growing trend to incorporate the integrity the immune system into risk assessment outlines.

The importance in not relying exclusively upon limited health effect endpoints, such as cancer or death, is exemplified by the chemical 2,3,7,8-tetrachlorodibenzo-p-dioxin, commonly referred to as dioxin. In this instance, the effect of dioxin on the immune system is a more sensitive endpoint than cancer. There are many chemicals in addition to dioxin which adversely affect the immune system: air pollutants (ozone, nitrous oxides); drugs (corticosteroids, estrogen); alcohol; insecticides (parathion, malathion, dichlorophos, mirex, endrin, lindane, DDT); herbicides (atrazine, 2,4-D, diquat, glyphosate or “Roundup”); fungicides (pentachlorophenol); metals (copper, cadmium, lead); and other chemicals used in industrial processes (benzene, polychlorinated biphenyls).

Endocrine System Effects
It is well known that the immune system is responsive to signals produced by the endocrine system. Therefore, chemicals that impair normal endocrine function may also adversely affect the immune system. A group of such chemicals known as “endocrine-disrupters” are found in air, water, and food products and like some immunotoxins and reproductive toxins are not acutely toxic nor carcinogenic.

Endocrine-disrupting chemicals include herbicides (2,4-D, 2,4-T, alachlor, atrazine); insecticides (chlorodane, dieldrin, DDT and its metabolite DDE, lindane, mirex, synthetic pyrethroids); fungicides (pentachlorophenol); metals (lead, cadmium, mercury); and other chemicals (dioxin, polychlorinated biphenyls, phenols, phthalates, styrenes). Some of these chemicals are now restricted in the United States but are present from previous use or are transported in the

A giant crocodile on Tanzania’s Gumeti River
Exposure to these chemicals pre- and/or postnatally produces permanent and irreversible effects on the development of the endocrine system and the tissues which respond to endocrine signals in both humans and wildlife, male and female. These chemicals act as steroid hormone agonists or antagonists hence enhancing or suppressing the regulated development of various tissues, respectively. The tissues most likely to be affected are those which possess steroid hormone receptors, e.g. tissues of the reproductive and immune systems as well as the thyroid, brain, liver, kidney, and skeleton. Effects associated with exposure to endocrine-disrupting chemicals in wildlife include abnormal thyroid function; changes in immune function; decreased fertility; decreased hatching success; and demasculinization and feminization in males with corresponding defeminization and masculinization in females. This phenomenon is best demonstrated by male alligators born with reduced or absent external genitalia in geographic areas where accidental releases of DDT have occurred.

A similar phenomenon has been noted on rare occasion in human male children from England. Additionally, a study which recorded human sperm counts from the 1930s to the present showed a significant decrease in the same time period and may contribute to the increasing rate of male infertility. Other documented effects in humans include lower birth weights, growth retardation, impaired memory, and neurological and behavioral deficiencies. Even though exposure may occur during development or shortly after birth, the latent adverse effects are often detected at the onset of or beyond maturity. Studies in laboratory animals suggest that chronic, low-level exposure in adulthood can also cause permanent changes in brain and reproductive tissues. It is unknown at this time if the same is true in humans.

Current efforts to develop screening tests for substances with steroid hormone activity may prove useful in at least detecting those chemicals that exert adverse effects through competition for hormone receptors. The limitations of the testing procedures and the relative unfamiliarity of the field of endocrine toxicity have contributed to the exclusion of these effects in current risk assessment guidelines. The end result is that because most chemicals affecting endocrine function are not acute toxins, mutagens, or carcinogens, they escape regulation.

Conclusion

Several of the chemicals known to cause adverse effects on the immune, reproductive, or endocrine system are specifically listed in the Clean Air Act (CAA) as "hazardous air pollutants" and should be regulated under the current risk assessment guidelines. However, the levels at which adverse effects occur in these systems may be much lower than that at which acute toxicity or cancer occurs. Therefore the current level of regulation might be insufficient to protect human health and the environment from the adverse effects of these chemical substances.

In summary, it is important for those in the legal profession to be cognizant of the potential adverse health effects exerted by environmental chemicals on humans and wildlife which are not specifically listed in regulatory statutes nor incorporated in current risk assessment guidelines. As research on these and other chemicals continues, more data on potential adverse health effects and reliable testing protocols should become available. This new information will provide environmental interest groups with more in-depth knowledge that may be used to advocate stricter regulations. As a result, Congress will be confronted with new issues when reauthorizing or amending environmental statutes. Regulatory agencies, when developing new risk assessment policies, must consider the most current scientific data and recommended protocols. Industry will then need to adapt its procedures in effort to comply with these new regulations.

*Suzanne V. Jacobson is a PhD student at the University of Maryland School of Medicine, Pathology Department, Program in Toxicology.
David Fischer has been promoted to Assistant General Counsel, Chlorine Issues, Chemical Manufacturers Association; Erin Fitzsimmons has accepted the position of Assistant Professor of Political Science at Salisbury State University and will be teaching environmental law and policy. Erin has recently been appointed to the subcommittee on the Environment and Economic Development of the Environmental Growth, Resource Protection and Planning Commission in Maryland; Ann Hobbs is a patent attorney with Cushman, Darby & Cushman in Washington, DC.

Linda Bailey has been named program coordinator for the Center for Epidemiology & Policy, Johns Hopkins School of Public Health. The Center will promote the use of epidemiologic evidence in the development of public policy. Carol Iancu is an associate attorney with Terris, Pravlik and Wagner, practicing civil rights and environmental law.

Wib Chesser is practicing environmental law as an associate attorney with Kilpatrick & Cody in Washington, DC; Darrell Cook, is associate attorney at Robinson and Cole in Hartford, Connecticut and is practicing civil litigation and environmental law; Kathryn Delahanty is pleased to announce the opening of her Baltimore law office for the practice of civil litigation; John Firth has established his own law firm practicing construction, product liability, environmental, and intellectual property law. John has been elected to the Executive Board of the Northern Maryland Technology Council. Shek Jain is an associate attorney with Jones, Day, Reavis and Pogue in Washington, DC; Karin Krchnak is an environmental consultant with Science Applications International Corp. in Falls Church, Virginia; Maureen O'Doherty has formed the partnership of O'Doherty & Mandel and is practicing primarily environmental law in New Haven, Connecticut; Edith Webster is an associate attorney with Hogan & Hartson in Baltimore and doing project finance for infrastructure projects, including energy, solid waste, and water/wastewater projects.

Steve Groseclose has been awarded a fellowship from the Robert Bosch Foundation for 1996-97. Beginning in August 1996, the fellowship will send Steve and his wife Jael Polnac ('94) to Germany for a year where Steve will work with environmental officials on a variety of projects. Steve currently is working for the Texas Natural Resource Conservation Commission where he has become the Supplemental Environmental Projects Coordinator. In this position Steve is responsible for developing projects to benefit the environment to be undertaken as part of agreements settling environmental enforcement cases. Steve is seeking to develop a menu of pre-approved projects that could be performed by independent third parties; Douglas Moorhead is an environmental attorney at Rich and Henderson in Annapolis, MD.

Dorothy Alevizatos is an associate in the Litigation Department at Gordon, Feinblatt, Rothman, Hoffberger & Hollander; Lauren Buehler is an environmental associate with the National Association of Attorneys General in Washington, DC; Jake Caldwell has become a staff attorney and the deputy director of the Trade, Health and Environment program at the Community Nutrition Institute. Jake is overseeing an innovative policy dialogue convened between representatives of the business community and environmental groups to explore issues involving trade and the environment. This group is seeking to find areas of common ground between industry and environmentalists on trade issues, including potential conflicts between multilateral environmental agreements and GATT, ecotagging, public participation in GATT and the WTO, and border adjustment taxes; Ann Marie DeBlasi is an attorney with Frederick County State's Attorneys Office; Linda Jenner is an associate attorney with Sugarman and Associates, an environment-oriented law firm in Philadelphia; Kenneth O'Reilly is a law clerk for federal district judge Catherine Blake; Jean-Cyril Walker has joined the Environmental Law Institute as an editor of the Environmental Law Reporter where he is responsible for monitoring and reporting on developments in several areas of environmental law.

Submit Alumni News Alumni News Update will be published again in Summer 1996. To submit Alumni News, simply send your name, class year, photo (if available), and the information to: Laura Mrozek, Environmental Law Program, University of Maryland Law School, 500 W. Baltimore St., Baltimore, MD 21201.
The Republican electoral revolution in November 1994 put the major federal environmental laws under siege. Proposals to relax the Clean Water Act, Superfund, the Safe Drinking Water Act and other environmental laws have been advanced in both the House and the Senate. The new Congressional majority also has sought to impose severe budget cuts for enforcement programs at EPA and the Department of Justice. This symposium will explore the future of environmental liability in this new political era.

Friday, April 12, 1996
Westminster Hall
Fayette and Greene Sts.
Baltimore, Maryland 21201

Featured Speakers

Jane Barrett, Assistant United States Attorney
Bruce Diamond, Swidler & Berlin
Senator Brian Frosh, Chairman of the Environmental Subcommittee of the Maryland Senate Economic and Environmental Affairs Committee
Kevin Gaynor, Vinson & Elkins
Linda Greer, Senior Scientist, Natural Resource Defense Council
Paul Kamenar, Executive Legal Director, Washington Legal Foundation
Eugene Martin-Leff, New York State Assistant Attorney General (Invited)
Evans Paul, Project Dir., Brownfields Initiatives, Baltimore City
The Honorable Jane Nishida, Secretary, Maryland Department of Environment
Michael Powell, Gordon, Feinblatt, Rothman, Hoffberger & Hollander
Katherine Probst, Senior Fellow, Resources for the Future
Rena Steinzor, Associate Professor, University of Maryland School of Law
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