Acid Rain: In Search of a Legal Solution

by

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INTRODUCTION

Almost one-half of the lakes in the Adirondack Mountains of Northern New York State are so acidic that they can no longer provide a habitat for fish. The number of these acid lakes has increased ten times in the past 50 years. The acids have destroyed entire communities of brook trout, lake trout and other fish species. They have also focused the attention of legislators, industry officials and environmentalists on the devastating effects of acid rain and on its probable sources. The Department on Energy and the Environmental Protection Agency have prepared pamphlets, reports and books on the possible causes of, and cures for, acid precipitation. The Senate has conducted extensive hearings on the subject. Scientists have developed models to track pollutants across regions. As the investigation continues, interested private citizens are becoming increasingly aware that substantive action must be taken.

The private property owner, the tourist and the resort manager in an area such as the Adirondacks all have an interest in the land and water damaged by acid rain. Environmentalists have an interest in the stability of the ecological system. These interests hold different degrees of legal significance. The private property owner and the resort manager have a legal interest in the destroyed land; they have lost a property value and profits. The vacationer and the environmentalist probably do not have a legally defensible interest in the land. They cannot show a personal harm, at least not to the degree the land owner can. Therefore, this article will concentrate on the remedies available to those with an economic or property interest in land damaged by acid rain.

Sources such as electric utilities and smelting operations cause acid rain by emitting sulfur dioxide (SO_2) and nitrogen oxide (NO_x) into the air. In the past, the damage has occurred primarily in the Adirondacks and New England, but is now spreading throughout the East. Studies conducted in 1980 in the Shenandoah National Forest in Virginia show evidence of the problem in the Blue Ridge Mountains and the Southeast and into Florida. This article focuses on SO_2 because industrial sources are responsible for these emissions, whereas automobiles and other vehicles are responsible for emitting NO_x. The damage that NO_x causes will be discussed, but bringing an action against individual auto owners, trucking companies and bus lines presents a much different and much more technically difficult problem than bringing suit against the industries responsible for SO_2 emissions.

A private citizen with an interest in damaged property must consider the many complex facets of the acid rain problem before deciding to bring his case to court. He must evaluate evidence on the damage done, who is responsible, how they are responsible, and how they can be brought to court. The most difficult facet of litigation is proving the cause and effect relationship between a pollution source and a specific lake dying in the mountains hundreds of miles away.

ACID RAIN: THE SOURCE AND THE DAMAGE

Acid rain is an environmental phenomenon that results from SO_2 and NO_x emissions and alters the ecosystem of the land it affects. The sources of these emissions include electric utilities, iron ore smelters, and automotive equipment, in addition to natural sources such as volcanoes and lightning. After SO_2 and NO_x are released into the atmosphere, they react with other chemicals to form sulfate or nitrate. These sulfates and nitrates then travel through the atmosphere and eventually fall to earth in the form of acid rain.

1. The Source

The major sources of SO_2 pollution are the emissions from fossil-fueled power plants, nonferrous smelters and steel manufacturing plants. As these industries burn fossil fuel to generate energy, the fuels release SO_2 into the atmosphere through the plant's smokestack. Sulfur dioxide emissions from these and all other sources account for about 70 percent of the acid rain problem, while nitrogen oxide is responsible for the rest. NO_x emissions originate from petroleum combustion in automobile engines. Although NO_x is a less severe problem than SO_2 at the moment, the concentration of NO_x is increasing at a faster rate than SO_2.

When sulfur and nitrogen oxides are released into the atmosphere, they undergo a chemical change and become sulfuric and nitric acids. The length of time that the acids travel through the air is a source of some controversy in the scientific community. Although scientists are certain that long-range transport of these pollutants does occur, they have not conclusively established the impor-

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tance of long-range transport of acid precipitation on local areas. To litigate successfully for damage resulting from acid rain, the plaintiff must advance strong evidence of long-range transport. Meteorological conditions such as wind, turbulence, convection, thermal layers, frequency and type of precipitation, orographic and water body information influence the length of time that a pollutant travels through the air. A litigator must identify and evaluate these factors before he can successfully prove that the long-range transport of air pollutants has influenced the chemical composition of a local ecosystem.

2. Effects and Damages

Acid rain becomes a destructive force because as SO_2 falls to earth it changes the chemical make-up of the environment. It increases the concentration of acids and alters the acid/alkaline balance in various ecosystems. The increased acidity in our rainfall has many effects on our environment and our lives. Direct effects include damage to lakes, soil, and forests, destruction of fish and plants and accelerated deterioration of buildings. Indirect effects include economic losses due to failed crops and tourism decline. Scientists are now examining the human health effects of drinking water from corroded pipes.

The measure for acidity in all compositions is the pH scale. The scale measures the number on unattached positively charged hydrogen ions in a solution. It is a logarithmic scale with values from 0 to 14. Values below 7 are "acidic" and above 7 are "alkaline." Normal rain is slightly acidic; it has a pH value of 5.6. Scientists recorded rain falling in New York, Ohio, Connecticut and Massachusetts as having an annual pH value of 4.1-4.2 in 1976-1979. That is, the acidity was over ten times the acidity of normal rainfall. Values as low as 2.1 have been reported in the United States.

Aquatic Effects

The increased acidity in our lakes has had a devastating effect. According to the testimony at a Senate Committee hearing, 264 of the 2,877 lakes in the Adirondack Mountains can no longer support life. As the acid level in a body of water rises, the activity of micro-organisms, which are responsible for decomposing organic matter and thereby adding nutrients to the water, decreases. Snails and crayfish, which are very sensitive to acidity, die out rapidly. Other fish suffer from calcium depletion in their bones and skeletons and become dwarfed or deformed.

Acid rain becomes more lethal to fish as a result of "acid shock" which occurs in the springtime when the winter's snow, laden with acids, begins to melt. This water flows into a lake, increasing the sulfate level in a short period of time, thereby creating an extreme chemical shock to aquatic life. If this shock occurs during the spawning season the female may fail to reproduce, or her eggs may have an abnormally high mortality rate. Sulfates falling onto the soil also cause damage to fish life by leaching aluminum into the water. The acids release aluminum ions through a chemical reaction betwen the oxides and the aluminum present in the soil. The aluminum runs off into the lake, causing damage to the gills of fish and eventually causing their suffocation.

Frogs, salamanders and other amphibians which depend on small pools of melt water for breeding are also affected because of the acidity level in these pools. These species are sensitive to the increased acids, and as a result, fail to breed. Not only may this lead to the extinction of the species, but it also causes a break in the food chain affecting animals that prey on lower life forms.

While the damage to the lakes is evident from the decline in the native species, the sources are not as evident. Scientists have noted naturally occurring acid lakes in this country for over a century. These lakes are typically located at high altitudes, are weakly buffered and silacious. Although the National Academy of Sciences has found that naturally occurring acidic lakes are "the exception rather than the rule," plaintiffs who intend to sue for damages to a lake with these characteristics would have a very difficult, if not impossible, task to prove that the damage was not due to natural causes.

Damage to Soils and Vegetation

Acid rain affects land and vegetation by inhibiting the growth of micro-organisms. The slowed decomposition of debris inhibits the recycling of nutrients in the soil depriving vegetation of these same nutrients. Additionally, acid rain decreases fertility, reduces the growth rate and causes defoliation in trees and plants by damaging the embryonic tissue. The heavy metals which acid rain causes to leach out of the soil are not only toxic to fish, but also to plants and animals.

The effect of acid rain on soils and plants varies with the thousands of species. The plant's protective covering, the need for the affected nutrients and the susceptibility to exposure to heavy metals, all cause a different degree of harm to different species. Experimental studies show that after exposure to acid rain, broccoli, mustard greens and radishes do not grow to the same weight as plants in a non-exposed control group. The fact that the damage occurs has been proven; the amount and the type of damage varies with each ecosystem.

Effects on Wildlife

The imbalance in one area of an ecosystem usually causes reverberations throughout the entire system. Birds and mammals which depend on lower organisms affected by acid rain are disappearing. The common loon, which feeds on affected fish, has declined in population over the past 15 years. One study has shown other birds and mammals, such as the American mink, muskrat, Great Blue heron and several species of ducks, to be particularly susceptible.

Effects on Buildings and Structures

Acid rain not only affects the land, lakes and living creatures, but also causes chemical reactions with materials. The rising pH level in rain can speed up the corrosion process in metallic roofing, cars, statues, and other exposed surfaces. Building surfaces erode much more quickly after exposure to these acids because the acid in the precipitation leaches chemicals out of stonework just as it does out of the soil. Statues in Greece which have stood since the fifth century, B.C., have disintegrated in the last decade because these pollutants have turned the marble into gypsum, a much softer stone. Although the Greek statues evidence a severe environmental problem, insufficient research has been conducted in this area to know the full extent of the causes and the damage.

Damage Claims in Litigation

A report prepared by the Department of Energy in 1981, summarized the effects of acid precipitation on aquatic life, land, vegetation and humans. The Department found that only the effects on aquatic life were conclusive. The studies concerning other parts of the ecosystem were based on laboratory experiments and circumstantial evidence. An interagency task force found it "extremely difficult" to separate the damage to buildings and structures from acid rain as opposed to normal wear. It found "little evidence to suggest that such effects have occurred in North America." The effects on crops and vegetation were "uncertain." Given the state of the research concerning the damage to soils, vegetation, wildlife and humans as a result of acid rain pollution, a litigant would have difficulty proving that acid rain is the cause of any of the damage suffered. The aquatic ecosystem is the only sector of the environment for which scientists have established clear and convincing evidence that acid rain has caused harm. The damage to water, plant life, and fish as a result of lower pH levels is indisputable.

The theory of the case will determine in some part what damages a plaintiff may claim. The damage claims available for each theory vary dramatically. The litigant must not only choose a theory that will win his case, but also one which will provide the proper relief. Under the Federal Clean Air Act and Clean Water Act, monetary damages are not available. Under tort theory, the plaintiff may claim injunctive relief or monetary damages after successfully proving his case. Courts have used two methods to calculate damages under tort theories: the "diminution-in-value" method and the "reasonable restoration cost" method. Under a trespass theory, the courts usually employ the diminution-in-value theory; that is, the difference in value before and after the damage. In a successful trespass action, damages are always allowed, even if the plaintiff cannot prove actual damage. Traditionally, the courts have granted an injunction as a result of a successful nuisance claim. The courts have relaxed this theory in pollution cases and have awarded permanent money damages when the relief has been more equitable for the parties involved.

Property damage estimates as a result of the actual damage to the environment are not easy to assess. The plaintiff may estimate his damage as the reasonable cost of restoring the lake. The usual method of restoration is through liming, which is an expensive process. The State of New York spends approximately $150,000 a year for liming its lakes. Because liming is so expensive, the courts may find it an unreasonable form of relief and instead award diminution-in-value of the lake before and after the damage. The major loss incurred is not the damage to the lake itself, but the damage to the fish and plants in the lake. Usually a land owner may not claim damages for wild animals on his property. This is based on the supposition that animals move across boundaries and really belong to no one. Fish do not move freely across boundaries and the property owner should include the destruction of the fish in his damage claim.

The cost to the State of New York as a result of the declining fish population is $15 million in recreational income. One economic impact study traced the damages from a fossil fuel plant to the land, vegetation and human health damage, and estimated the total impact to be $770,000 per year. The impact studies vary as to the cost of pollution based on how detailed the assessment of damages is.

In the celebrated case of *Commonwealth of Puerto Rico v. SS Zoe-Colocotroni*, 628 F. 2d 652 (1st Cir. 1980), the State of Puerto Rico claimed damages resulting from an oil spill off its coast for the destruction of an entire ecosystem ranging from mangrove trees down to the destroyed micro-organisms. The court limited recovery to what was practical to restore. The courts are likely to use a "reasonableness" test in assessing damages as a result of pollution damages. The land owner must evaluate his loss and the various methods for assessing that loss. He must document his loss and come to court with a reasonable assessment of the damages.

QUESTIONS OF SUBSTANTIVE LAW

The Federal statutory law relating to acid rain is quite limited. Neither the Clean Air Act, nor the Clean Water Act deal directly with sulfates or nitrates and only the Clean Air Act regulates SO_2 and NO_x emissions. Different laws and theories are applicable to one suing within a State as opposed to across State or national boundaries. Therefore, the American citizen who incurs damages as a result of acid rain has a series of hurdles to overcome before obtaining a successful judgment. He must consider the jurisdiction of the court, the probability of a sympathetic judge, and favorable precedents. He must choose a theory of law for the damages claimed. He must decide whom to sue: a smelter, a utility, or possibly the government. Finally, and with the most difficulty, he must prove the cause and effect relationship between the defendant and his property. Each of these decisions will vary with the relationship of the property owner to the defendant.

1. Federal Substantive Law

Federal law, even with the increased emphasis on environmental legislation, has fallen short of providing relief to individuals whose property has been damaged by air pollution. Laws enacted in the 1970's dealt with setting standards and monitoring compliance between the pollutors, the state, and the federal government, but these statutes do not call for remedies to private individuals for continuing damage as a result of pollution. This may have been due to the optimistic notion that once the programs were enacted, pollution damage would cease, absent violation of the statute. If industry violated the statute, the government could invoke the civil penalties provided for in the statute. Sulfates and nitrates, however, are not regulated under the Acts. Pollution damage as a result of these acids not only has no private remedy under the statutes, but, because the statute does not address the pollutants directly responsible for acid rain, the government also has no cause of action to press civil charges.

2. State Substantive Law

Even though no state has enacted a statute dealing directly with private damage for acid rain pollution, state common law tort theories present the most promising alternative for bringing an action. Trespass and nuisance are the two theories likely to succeed; both have been

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tested in the area of environmental litigation and have met with some success. Of course, the applicability of state tort law to environmental litigation will vary from state to state.

Trespass

Trespass is defined as a direct invasion interferring with the exclusive possession of an owner in his land. It can be differentiated from nuisance because nuisance may be indirect and is concerned with use and enjoyment rather than possession. The line distinguishing the two theories is wavering, especially in the area of air pollution, because the direct/indirect dichotomy is becoming more relaxed. The precedent underlying the two theories may vary between states, and therefore, the litigant should research both theories for potential authority relating to acid rain damages. Litigants have used trespass successfully in a number of air pollution cases including cases dealing with noxious gases, florides, and sulfur dioxide. In 1959, the Supreme Court of Oregon held that invisible floride compounds settling on the land and rendering it unfit to raise livestock constituted actionable trespass.

In *Borland v. Sanders Lead Co.*, 369 So. 2d 523 (Ala. 1979), the Supreme Court of Alabama held that compliance with Air Pollution Control laws did not negate civil liability for property damage due to smelting activities. The plaintiff sued in trespass for property damage from invisible sulfur dioxide and lead emissions. The court evaluated the advances of science, specifically in chemistry and physics and stated that the concept of direct invasion of a "thing" must be reevaluated to encompass particles, albeit invisible which have a force and effect upon the land. This decision comports exactly with the theory needed in acid rain litigation. Sulfate, which cannot be seen, physically invades the land and destroys property.

The problem of proving causation remains even if one assumes that trespass is an appropriate theory. In the *Borland* case, the smelting operation was located next door to the plaintiff. This simplified causation problems. In the usual acid rain case, the source will be hundreds of miles away. The problems involved with this element of litigation will be discussed below under "Proving the Case."

Nuisance

A private nuisance is created by the interference with an owner's use and enjoyment of his land. Acid rain certainly falls into this category when it results in destroying a body of water on private property. Nuisance may be predicated on negligence if that negligence affects the private use and enjoyment of the land. Once a litigant has proven that a nuisance exists, the usual remedy is for the court to issue an injunction. Courts have evaluated this remedy, especially in pollution cases, by looking at the relative impact of issuing an injunction versus awarding money damages to the plaintiff. In *Boomer v. Atlantic Cement Company*, 257 N.E. 2d 870 (N.Y. 1970), a court in New York evaluated the relative hardship involved in closing a cement plant or awarding money damages. The court held that the plant maintained a private nuisance by emitting dust particles which fell onto the plaintiff's land. The court substituted damages for injunctive relief because of the economic hardship involved in closing the plant. This evaluation in the area of acid rain would most likely lead to the award of money damages. Courts might be reluctant, especially in these difficult economic times, to close a utility or a smelter, thereby inflicting economic hardship, to save a lake. A court might enjoin a facility by ordering the use of lower-sulfur coal or more sophisticated equipment, but these remedies could have a costly impact on the communities purchasing the plants' products or services.

Litigants have been relatively successful using nuisance and trespass theories in air pollution actions. They present the most promising theories upon which to bring an action; however, they leave open the problem of proving direct causation and damages. Even if a court is sympathetic to the injury and willing to analogize from other legal theories to acid rain, if the litigant cannot prove causation, the court cannot award damages.

PROVING THE CASE

Under our system of justice, the defendant must be found liable for the offense with which he is charged, not for conducting an activity that may have led to the damage claimed. In the case of acid rain, the particular defendant, not his industry or his region, must be found to have emitted the specific SO_2 particles which caused damage to the plaintiff's property. SO_2 emissions may have a very brief residence time in the atmosphere on one particular day, and because of changing weather patterns, emissions from the same source may be transported hundreds of miles in a few days or weeks. Regardless of the litigant's theory of substantive law, he must be prepared to link the defendant to the actual damage caused. If the litigant is seeking to enforce standards violated under the Clean Air Act then he does not need to show damages; he must only prove that a violation has occurred. Under every other theory, however, the plaintiff must prove that the damage caused to his property can be traced to the defendant's source.

1. Scientific Models

Many variables including seasonal changes in wind direction, precipitation, stack height and topography affect the residence time of air pollutants. Scientists have considered these variables and have developed models to trace SO_2 emission sources. They have generated these models by selecting a grid point on a map and putting meteorological data into a computer to track the speed and direction of pollutants. Matrices have been developed for 238 Air Quality Control regions. One model has separated sources into three categories: utilities, industrial, and area sources. All models have been limited to calculate SO_2 emissions. Scientists developed the models to help make policy decisions in forecasting the effects on one region of a utility changing from one fuel source to another. Models have also been used to track the causes of emission standards violations in a particular region. The model developed by the Brookhaven National Laboratory, or the BNL model, is the one most relevant to the evidentiary problems of the private litigant. This model approximates the long range transport of SO_2 particles from individual point sources. The sources are

selected based on inventory sources in the Air Quality Control Regions and are comprised of both utility and industrial sources. This model is limited, as are the others, because data are limited to four months out of a single year. Also, even if the model identifies a source emitter, it can only identify a receiving area by region. This model could be used in class actions to prove damage to a region but not to a specific lake.

Local sources may be traced through the computer model technique. The Air Quality Model currently used by the EPA is considered reliable for distances up to 31 miles from the source. If an area is relatively industry-free (as is the Adirondacks region), and the EPA model tracks local source pollution, then the evidence reasonably points to the industry or, more likely, the utility, local to the damaged area. The proof is circumstantial, because sulfate cannot be "finger printed" as can oil in an oil spill case. Science is not yet capable of comparing the sulfate in a particular water body to the SO_2 coming out of a smokestack. Circumstantial evidence is a reasonable basis for deciding liability if one assumes it is based on reliable inferences. Given the circumstances above, the evidence pointing a particular source in a land area is a reasonable indication of liability.

Unfortunately, most acid rain problems do not stem from local sources and the litigant must present other evidence. Long-range transport models are not as well documented as local area models. Scientists must use more complex analysis and estimate more variables. Although the matrices represent significant strides in tracing emission sources they have not yet been fine-tuned. Unless the private litigant is interested in suing a region of pollutors under an enterprise theory, the matrix models are not yet a viable tool in litigation. The enterprise theory will be discussed below.

2. Remote Sensing

Remote sensing is an alternative to the matrix model. Remote sensing uses a set of technologies to collect information about the earth. It usually employs special aerial photography along with other sensory devices such as radar, thermal infra-red scanners and microwave radiometers, often in combination with computer processing and satellite communications. This technique is currently used to monitor violations under the Clean Water Act. Cameras using special film can identify landfill operations, unauthorized discharges of hot water into ambient water systems and discharges into water systems at unauthorized times. Litigators have also used remote sensing to monitor air pollution activities. In *Vermont v. New York State*, 417 U.S. 270 (1974), the technique was used to track a plume of smoke from a paper mill in New York State across the border to Vermont. Vermont used a Landsat satellite image to supplement the testimony of an expert witness. The remote sensing evidence was not actually admitted into evidence, however, because the case was settled.

Remote sensing is primarily used as a visual aid in cases in which the plaintiff relies on other evidence to prove his case. It is an innovative technique, and like matrix models, the courts have not tested or approved its reliability. Remote sensing does provide some advantages for the environmental litigant: it is capable of monitoring a large area which is needed to produce evidence of long range transport, and is also less costly than other types of monitoring. Since it is a new technique and one that has met with some skepticism, it does not have the requisite reliability as a basis for an action, at least not in cases in which other strong facts are not available.

3. Alternatives to Scientific Evidence in Tort Law

The litigant who is skeptical of the courtroom success of evidence based on matrices or remote sensing may nevertheless attempt to prove causation by using alternatives to the usual evidentiary tools. In some specialized circumstances in tort litigation the courts have allowed the plaintiffs to shift the burden of proof to the defendant. In *Summers v. Tice*, 199 P.2d 1 (Cal. 1948), the plaintiff was shot by one of two hunters. Because the plaintiff could not prove which of the two had actually pulled the trigger, the court left the burden to the defendants to prove they had not been the one to shoot. This same theory may be available to the plaintiff who does not know which source polluted his lake. In the case of acid rain, however, no well defined group of potential defendants exists. It is unlikely that all utilities or smelters in a region could be named in an action and the burden left to them to prove which was actually guilty. The group of possible violators usually will simply be too large in this circumstance.

A second theory used in tort law is the enterprise theory. Under this analysis, the plaintiff must only prove that *one* of the named defendants must be responsible. The theory is based on the proposition that when a product causes damage and the plaintiff is unable to identify the specific source, the industry as a whole should be responsible for damage caused by one of its products unless a defendant can prove he was not a party to the "enterprise." In *Hall v. E.I. Dupont Nemours and Co.*, 345 F. Supp. 353 (E.D.N.Y. 1972), children who were hurt by blasting caps sued six American manufacturers who comprised a substantial portion of the explosives industry. The court, stressing that the industry was centralized and used similar manufacturing processes, held the industry responsible for the damage. The theory has not yet been widely accepted. Furthermore, the probable defendants in acid rain litigation would come from different industries. Even those within the same industry may be more or less responsible depending on the variable sulfur level of the fuels burned at the individual plants.

The market-share theory is a third plausible alternative for frustrated plaintiffs in acid rain litigation espoused by at least one commentator as a method of getting compensation for damage due to acid rain. Under this analysis the court would use the test set down in *Sindell v. Abbott Laboratories*, 607 P. 2d 924 (Cal. 1980). Under the ruling in *Sindell*, the plaintiff need only show that:

(1) all defendants produced the injurious product;
(2) the plaintiff, through no fault of his own, cannot identify the defendant;
(3) the manufacturers joined produce a substantial share of the product. Each defendant is then held responsible for his "share" of the market.

Sindell dealt with the devastating side effects of a drug manufactured by many drug companies and sanctioned by the FDA. The plaintiff suffered from the drug, but did

not know which company had manufactured the actual drug consumed. The acid rain litigant may have problems applying this theory for a number of reasons. First, the *Sindell* case was based on a personal injury and not property or economic damage. The courts would probably be less likely to put the defendants in the position of presumed liability when the injustice is economic rather than physical. Second, the share of the market for the manufacturers of a specific drug is relatively easy to estimate if it is not known as a matter of fact. Market shares, however, cannot be computed across industries: one cannot calculate the relative "share" of the market of a smelter as opposed to a utility. The courts could modify the market share approach and apportion damages according to the relative amount of SO_2 emitted from each source. As mentioned above, however, modern scientific techniques are not yet advanced enough to pinpoint a source; if they were, that source could simply be sued individually.

Finally acid rain has become a political issue. Scientists cannot agree that the major cause is industry, although the evidence seems overwhelming. Industry, understandably, remains vehemently opposed to premature legislation because scientific evidence "can't identify the smoking gun." Given this climate, a court will probably not look favorably on the adaptation of personal injury tort theory to allow a plaintiff to recover for property damage.

Scientists have made significant strides in the last five years toward identifying the sources of pollution. At the present time, however, scientists can only define the evidence of causation in general terms and generalities will not win a lawsuit. The litigants in many instances simply does not have the necessary tools to produce the evidence needed to win a case.

ALTERNATIVES TO THE TRADITIONAL CAUSE OF ACTION

The state of the art in tracking air pollutants remains too primitive to allow a litigant a reasonable chance of success in a traditional tort case. Faced with diminished property values and possible business losses, he is therefore left to either suffer the loss or devise an alternative remedy for his damage. He may consider suing the federal government for the inverse condemnation of his property, or organizing with other damaged property owners to demand legislative enactment of statutory authority that will give him a basis for recovery. These two alternatives are not likely to meet with complete success, but may provide a reasonable, less expensive means for the litigant to recoup his losses.

1. Inverse Condemnation

Property owners have been forced to accept the risk of damaged property because the federal and state governments have in effect permitted industry to use the property as a waste site for its emissions. The government has allowed this because although proof of the damage in the Northeast is abundant, a one-to-one relationship from the source to the damage has not been established. Industry has lobbied that causation must be proven before suspected sources should be held responsible. Congress has looked at the impact on the economy of Ohio and Michigan of enforcing strict legislation. The government has made a decision to allow the pollutors to continue emitting SO_2 and to let the property owners lose their capital investment.

A property owner has a constitutional right not to have property taken without just compensation. What constitutes a "taking" has been the subject of many lawsuits over the years. Damage as an incidental result of government activity may be considered a taking, while complete destruction of property may not. The Supreme Court held in *United States v. Causby*, 328 U.S. 256 (1946), that government planes flying over a chicken farm and disturbing the occupants and their chickens constituted an easement and was compensable by the government. Acid rain causes analogous damage by interfering with the property in question through the use of air space. The government, however, is only indirectly involved. The argument that through the government's inaction, a litigant is entitled to compensation is a step removed from active government participation in an activity. To decide that the government is responsible for damage resulting from industrial pollution in which it took no part would open the doors to such a multitude of claims that the courts would be unlikely to find favorably for the plaintiff.

2. Citizen's Lobbies

The litigant has a final option in seeking compensation for acid rain damage; that is to demand legislation that will give him the right to bring a case to court. The federal and state governments have enacted legislation to redress other environmental harms such as oil spills and toxic waste. Acid rain is a serious problem. It is getting worse. If the owners of the land already affected do not demand that legislation be passed, then the situation can only lead to more serious consequences. Industry is opposed to legislation. If the citizens with a stake in the determination of the policy issues do not actively voice their complaints, then a future litigant will be in the same frustrating position as today's litigant.

CONCLUSION

Acid rain presents the perfect example of the problems involved in litigating environmental issues. Common law doctrines do not easily fit into the facts surrounding the case. Courts must redefine terms such as "physical invasion" or "trespass" in light of characteristics of pollution and the damage it causes. Statutory law is not yet completely developed and does not cover all the problems and effects of the pollution source. Industry is organized to fight the expensive procedures necessary to abate the problem, and research is insufficient to prove what the future implications will be if the legislation is not passed.

The litigant who wishes to sue for damages due to acid rain must consider the available substantive law. Only the common law of trespass and nuisance provide a reasonable chance for a successful suit. After choosing a theory of law, the plaintiff must gather the evidence linking the damage to its source. The general scientific evidence available today is usually not adequate to prove the liability of a specific defendant. The litigant may be successful in a specific action claiming tort damage to his property by a local source, but in the overwhelming number of cases, the potential defendant is not local. The property owner is an unfortunate victim of our system's inadequate accommodation of environmental rights and remedies. Until science can prove that a link between the

damage and the source exists, the time will not be ripe to litigate for the damage caused by acid rain.

The attorney, then, is left in the uncomfortable position of accepting that a valuable right may be violated and that he, despite his expertise concerning the law, cannot demand relief for his client. This conclusion leaves the lawyer in a frustrating position but not in a unique one. The lawyers of the late 1960's were in the same position when they confronted traditional air and water pollution problems. These attorneys turned to the legislature for enactment of the statutes necessary to rectify the inequities of a system in which the pollutor was not expected to pay for his damage. We have made great strides in some areas of air and water pollution and now must channel the same type of effort into demanding on diplomatic, political, legislative and social levels, an accounting for the unchecked violation of our lands and water through acid rain pollution. The attorney interested in a solution to acid rain pollution must focus his expertise in advocacy, not on the courtroom, but on the people who can change the law.