



Natural Resources Journal

12 Nat Resources J. 4 (*Pollution and Political Boundaries: U.S. - Mexican Environmental Problems*)

Fall 1972

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Recommended Citation

John C. Ross, *Environmental Law: Air Quality Litigation in the El Paso-Juarez Area*, 12 NAT. RESOURCES J. 551 (1972).
Available at: <http://digitalrepository.unm.edu/nrj/vol12/iss4/11>

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ENVIRONMENTAL LAW: AIR QUALITY LITIGATION IN THE EL PASO-JUAREZ AREA

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EL PASO—THE INTERNATIONAL CITY

El Paso, Texas is located in the western tip of the State of Texas. Its city limits abut the State of Chihuahua in Old Mexico to the south and New Mexico to the northwest. El Paso's sister city is the City of Juarez, Mexico which lies in the State of Chihuahua to El Paso's immediate south (*see map*).

El Paso's present population is approximately 350,000 people. The population of the City of Juarez is approximately 500,000 people.

From the geography involved, it is apparent that El Paso's air pollution will affect our neighbors to the south in Juarez as well as our neighbors to the northwest in New Mexico. Likewise, what affects these other areas will also affect the City of El Paso. Thus, it is a matter of the utmost necessity that the complete cooperation and coordination of the health officers of all three areas be obtained if meaningful measures are to be taken in removing pollution as a problem to the people living in these areas.

CURRENT LITIGATION IN THE EL PASO AREA

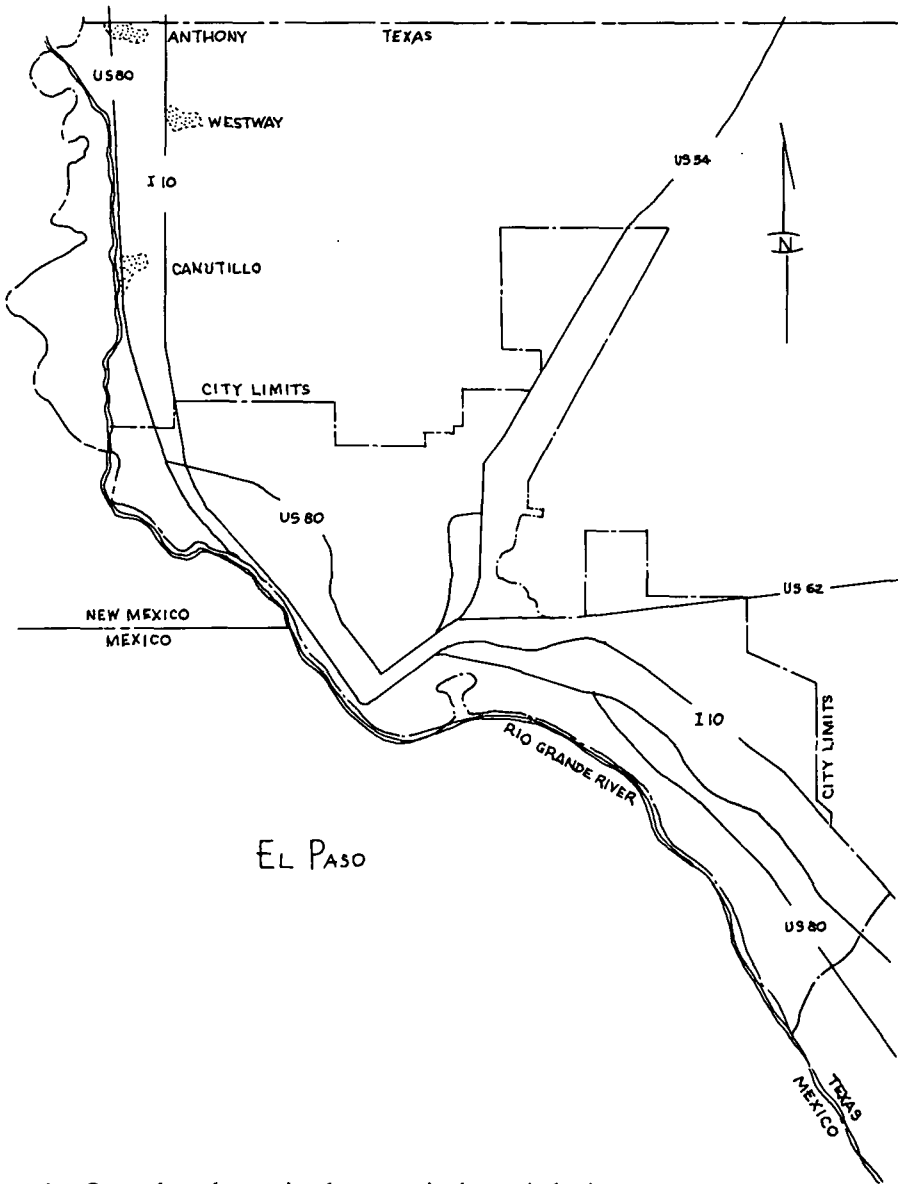
The City of El Paso has moved into the field of air pollution within the last few years in an effort to meet its responsibility, not only to the people of El Paso, but also, in some small way, to the people of Juarez, Mexico and Anapra, New Mexico.

The city has filed two air pollution lawsuits to date. The first case filed was brought against the American Smelting and Refining Company and was filed on the 17th day of April, 1970. It is docketed as cause No. 70-1701 in the Forty-First Judicial District Court in El Paso, Texas. The second lawsuit resulted in an agreed order being entered in favor of the city and calls for the defendant to install new equipment for the control of its emissions.

In the *American Smelting* case, El Paso, in its first amended petition,¹ alleged the following against the defendant:

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1. *City of El Paso v. American Smelting and Refining Co.*, Civil No. 70-1701 (41st Dis. Tex., filed April 17, 1970).



1. Low level particulate emission violations.
2. Violation via emission of toxic material into the ambient air.
3. Sulphur dioxide emission violations.
4. Violations of opacity regulations.
5. Operation of the El Paso plant in such a way to cause a public nuisance.

Two of these allegations, in their order of priority, should be elaborated on to give a better understanding of some of the remarks that will follow.

The most serious allegation contained in the present lawsuit, in my opinion, is the one charging emission into the ambient air of toxic materials. Specifically, the portion of the petition relating to these emissions charges that during the years 1969 and 1970 the following materials were emitted into the ambient air:

1. 1969
 - a. Cadmium 3.276 tons
 - b. Lead 291.626 tons
 - c. Arsenic 0.2996 tons
 - d. Zinc 138.53 tons
2. 1970
 - a. Cadmium 3.90 tons
 - b. Lead 511.10 tons
 - c. Arsenic .56 tons
 - d. Zinc 263.5 tons

The next allegation charges some sixty-eight violations of sulphur dioxide emissions over .5 ppm for a one-hour period.

GENERAL PROBLEMS ARISING FROM THE PREPARATION OF AIR POLLUTION CASES

The most important problem faced by the trial lawyer is the identification of the industry involved. This is not as easy as it sounds for often, due to zoning regulations, industrial development is such that a large number of industries will locate in a very small area. This, of course, will always bring a cry from the accused that it is not their emissions but those of others that are the cause for concern. Hence, the trial lawyer is faced with the difficult task of locating specific items of proof that will be admissible in a court of law that go to prove that, indeed, it is the emissions of the accused industrial polluter that are the problem. It is suggested that this particular problem be approached in two ways.

The first approach would be via discovery processes available to the attorney. In Texas, the trial lawyer is armed with very adequate pre-trial discovery procedures allowing him to undertake the following discovery steps:

- a. Preparation and filing of interrogatories to parties,²

2. Tex. R. Civ. P. 168 (1967).

- b. Preparation and filing of a Motion for Discovery and production of documents for inspection, copying or photographing.³
- c. Preparation and filing of a Request for Admission of Facts and Genuineness of Documents.⁴
- d. Taking the oral deposition of parties.⁵

When the above mentioned pre-trial discovery devices are adequately used by the trial attorney, often emission inventories and other important items are discovered so that the identification of the industrial polluter is made and any objections are thus eliminated.

This problem, however, must also be attacked by proper engineering investigation. I would approach this in consultation with a sanitary engineer. Together, the trial attorney and the engineer can map out a very adequate sampling program which, when taken with emission inventories and other matters obtained through pre-trial discovery process, tend to further point the finger at the offending source.

Some of the following sampling methods can be of great help to the attorney and engineer in locating a pollution source:

1. Upwind and downwind high volume air samplers, properly placed and run at the same time, can give good results as to what contribution to the ambient air is being made by a particular source.
2. Twenty-four high volume ambient air samplers, properly placed throughout a city, can give adequate information as to how the general air is being affected, particularly when tracing a specific pollutant.
3. Soil samples, properly taken and analyzed, can also be of great help when tracing a particular pollutant, such as lead.
4. Interior household dust samples are also a great help when tracing a particular pollutant.
5. Dust taken from roof tops can also be helpful in determining rate of accumulation.
6. Sulfation plates are helpful in trying to trace concentrations of sulphur dioxide.
7. Low volume samplers should also be used to get extremely accurate ambient readings.

In addition to the job faced by the trial lawyer in identifying the industrial source of emissions, the attorney is also faced with the further and perhaps more difficult job of identifying the

3. Tex. R. Civ. P. 167 (Supp. 1971).

4. Tex. R. Civ. P. 169 (1967).

5. Tex. R. Civ. P. 186 (1967), Tex. R. Civ. P. 186 (a) (Supp. 1971).

different types of pollutants being emitted into the ambient air. This is a very important part of preparation of the trial attorney, particularly when dealing with emissions which by their nature are toxic to man.

One of the most fruitful sources of information concerning the identification of specific pollutants is the emission inventory, if your air pollution agency requires such, of the industrial source or their company records. As mentioned previously, when properly developed by pre-trial discovery methods, the attorney may well come into possession of the exact types of pollutants that he will be required to deal with in solving his problem. Many times he will be able to discover emissions of lead, zinc, cadmium, arsenic and like materials.

In addition to company records, which should be thoroughly investigated by the trial attorney, the attorney should insist that all high volume air sampler filters be analyzed by atomic absorption analysis for heavy metal content. In this way, the attorney can have information available to him, particularly from upwind and downwind samplers, not only of the total amount of particulate being emitted by a suspected source, but also the exact nature of the particulate being emitted. This is very helpful especially when compared with a company's emission inventory.

High volume ambient air filters should likewise be analyzed by atomic absorption analysis to give the attorney an idea of the general contribution of specific pollutants to the ambient air in the community. A comparison of these figures may also be helpful with information gained from company records, particularly when dealing with one large single polluter or a unique type of pollutants which is being emitted from only one source.

Soil samples should be ordered by the attorney, particularly when dealing with heavy metals such as lead. Likewise, tests should be run, again by atomic absorption analysis, to determine content of soil in different areas of a community. In some cases, this type of testing can give a clear picture of the area affected. In this way, the attorney can begin to see the exact area which will cut down the area of investigation and allow concentrations of other tests within the contaminated area.

Once adequate soil samples have been taken and the area of contamination identified, the trial attorney should then again consult with the sanitary engineer and proceed to map out a plan for random sampling of house dust. When adequate house dust

samples have been obtained, they should be analyzed by atomic absorption analysis for heavy metal content. Such a procedure can arm the trial attorney with very interesting facts for presentation at the trial of the lawsuit. For example, house dust containing 1516 ug of lead per gram of dust to 2450 ug of lead per gram of dust is sufficient to increase by tenfold or more the normal daily intake of a child who ingests merely one gram of such dust.⁶ Clearly, houses containing leaded dust in these ranges present a potential hazard to young children and, as such, are unacceptable in any modern community.

In addition to the problems involved in house dust, the trial attorney should also have the sanitary engineer obtain samples from roofs of buildings in the contaminated area and have these also analyzed for heavy metals. In addition to the sample from each roof, the attorney must insist that the engineer pay particular attention to the construction date of each building from which a sample is taken. In this way, the attorney can avoid the contention that the heavy metals found are not of recent origin. It is quite obvious that lead, for example, found on the roof of a building two years old was not laid down years past. In addition to the problem concerning deposition time, roof samples also give some idea as to airborne fallout and the problems arising therefrom.

This discussion has been primarily about problems arising in a contaminated area from heavy metal fallout. However, it is also important to mention at this point the aid provided the trial attorney from sulfation rate plates and the data gathered therefrom. A sulfation plate is a small dial which, when properly placed, can measure the concentrations of sulphur dioxide in the area of concern. Sulphur dioxide is a pollutant in and of itself, but it can also give the attorney some leads in his investigation of areas of heavy metal particulate contamination. The reason that sulfation plates tend to be of some aid in this regard is that small particulates, one to two microns in size, tend to follow the gas streams of sulphur dioxide deposition and, in a crude way, the sulphur dioxide acts as a tracer for these fine particles. Hence, if the attorney and sanitary engineer can identify high areas of SO² concentration, they can also expect to find deposits of heavy metal particles inside the same general area. Of course, this

6. Committee on Biologic Effects of Atmospheric Pollutants, National Academy of Sciences, *LEAD Airborne Lead in Perspective* 139 (1972).

assumes that both are known to be emitted from the suspected source.

Once the attorney and the sanitary engineer have done their homework and made the above investigations, these should be plotted on maps of the area or areas suitable for courtroom demonstration and introduction into evidence. The following maps should by all means be properly prepared and offered into evidence:

1. Map showing soil analysis
2. Map showing house dust analysis
3. Map showing roof dust analysis

This type of evidence can do more for a clear understanding of the scope of the problem than anything else. Not only do you show the court the analyses by pin point plotting, you show the court where each sample was taken from and develop an overall pattern of contamination.

PROPERTY

In addition to the matters previously discussed, the trial attorney must also be aware of injury that pollutants may cause to people, property and vegetation. The case must be investigated to determine to what extent, if any, that injury or damage may have been sustained by any of the categories listed above.

In regard to damage to property, the attorney should again enlist the aid of a sanitary engineer to see what types of property damage may be associated with the suspected pollutant involved. For example, a buildup of soil concentrations of lead in a public park or other play area may well make such property unusable for such purposes and would amount to damage of such property. In dealing with a pollutant such as sulfuric acid mist, metals may be attacked causing damage to such materials. In any event, the point to be made in dealing with suspected pollutants that may be a problem in regards to property damage is that the attorney must be armed with sufficient information about the suspected pollutant and its effects to know what types of property may be subject to damage in each case.

HUMANS

Pollutants may likewise be injurious to humans and, of course, a thorough investigation of this problem must be made by the trial attorney in preparation of a lawsuit. It would be appropriate

at this time to mention the following pollutants and their effects on people: Sulfur oxides; Lead; Cadmium; and Arsenic.

In regard to SO₂ emissions, information is set forth in the document entitled "Air Quality Criteria for Sulfur Oxides"—National Air Pollution Control Administration publication No. AP-50 in regard to health effects of SO₂.⁷

7. Environmental Health Service, Public Health Service, HEW, Air Quality Criteria for Sulfur Oxides 161-2 (1970).

1. *Effects on Health:*

Analyses of numerous epidemiological studies clearly indicate an association between air pollution, as measured by sulfur dioxide, accompanied by particulate matter, and health effects of varying severity. This association is most firm for the short-term air pollution episodes.

There are probably no communities which do not contain individuals with impaired health who are particularly susceptible to the adverse effects of elevated levels of sulfur oxides and particulate matter. However, to show small changes in deaths associated with coincident higher levels of air pollutants requires extremely large populations. In small cities, these changes are difficult to detect statistically.

The epidemiologic studies concerned with increased morbidity as measured, for example, by increases in hospital admissions or emergency clinic visits, are most easily detected in major urban areas.

It is believed that, for the large urban communities which are routinely exposed to relatively high levels of pollution, sound statistical analysis can detect with confidence the small changes in daily mortality which are associated with fluctuation in pollution concentrations. Such analysis has thus far been attempted only in London and in New York.

The association between long-term community exposures to air pollution and respiratory disease incidence and prevalence rates is conservatively believed to be intermediate in its reliability. Because of the reinforcing nature of the studies conducted to date, the conclusions to be drawn from this type of study can be characterized as probable.

The association between long-term residence in a polluted area and chronic disease morbidity and mortality is somewhat more conjectural. However, in the absence of other explanations, the findings of increased morbidity and of increased death rates for selected causes, independent of economic status must still be considered consequential.

Based on the above guidelines the following conclusions are listed in order of reliability, with the more reliable conclusions first.

a. AT CONCENTRATIONS OF ABOUT 1500 ug/m³ (0.52 ppm) of sulfur dioxide (24-hour average), and suspended particulate matter measured as a soiling index of 6 cohs or greater, *increased mortality* may occur. (American data; see Chapter 9, Section C-1a.)

b. AT CONCENTRATIONS OF ABOUT 715 ug/m³ (0.25 ppm) of sulfur dioxide and higher (24-hour mean), accompanied by smoke at a concentration of 750 ug/m³, *increased daily death rate* may occur. (British data; see Chapter 9, Section C-1a.)

c. AT CONCENTRATIONS OF ABOUT 500 ug/m³ (0.19 ppm) of sulfur dioxide (24-hour mean), with low particulate levels, *increased mortality rates* may occur. (Dutch data; see Chapter 9, Section C-1a.)

d. AT CONCENTRATIONS RANGING FROM 300 ug/m³ to 500 ug/m³ (0.11 ppm to 0.19 ppm) of sulfur dioxide (24-hour mean), with low particulate levels, *increased hospital admissions* of older persons for respiratory disease may occur;

From a brief examination of the comments from the Federal Criteria data on sulfur oxides, it is plain to see that SO² can well be a health problem. Further, it is a much more serious problem to those individuals in a community who suffer from asthma, emphysema or chronic bronchitis.

The trial attorney, therefore, must prepare his case not on the basis of the effect of SO₂ on the HEALTHY, but rather on the members of the involved community who suffer from impaired health.

Lead is another item that has a potential to be injurious to both adults and children. It would appear, however, that very young children are more particularly susceptible than adults to the effects of lead.

Given the fact that young children are more susceptible to the toxic effects of lead than adults,⁸ the trial attorney, when working with this type of material, should obtain the assistance of a qualified pediatrician to aid and assist in the investigation of the effects of large emissions of lead into the air. If young children live near a source of large lead emission, then both the attorney and the doctor should make arrangements for blood tests to determine whether or not any of the children may be suffering from the effects of undue absorption of lead or lead poisoning.

The Surgeon General of the United States has prepared a

absenteeism from work particularly with older persons, may also occur. (Dutch data; see Chapter 9, Section C-1b)

e. AT CONCENTRATIONS OF ABOUT 715 ug/m³ (0.25 ppm) of sulfur dioxide (24-hour mean), accompanied by particulate matter, *a sharp rise in illness rates* for patients over age 54 with severe bronchitis may occur. (American data; see Chapter 9, Section C-5.)

f. AT CONCENTRATIONS OF ABOUT 600 ug/m³ (about 0.21 ppm) of sulfur dioxide (24-hour mean), with smoke concentrations of about 300 ug/m³, patients with chronic lung disease may experience *accentuation of symptoms*. (British data; see Chapter 9, Section C-5.)

g. AT CONCENTRATIONS RANGING FROM 105 ug/m³ to 265 ug/m³ (0.037 ppm to 0.092 ppm) of sulfur dioxide (annual mean), accompanied by smoke concentrations of about 185 ug/m³, *increased frequency of respiratory symptoms and lung disease* may occur. (Italian data; see Chapter 9, Section C-2.)

h. AT CONCENTRATIONS OF ABOUT 120 ug/m³ (0.046 ppm) of sulfur dioxide (annual mean), accompanied by smoke concentrations of about 100 ug/m³, *increased frequency and severity of respiratory diseases* in schoolchildren may occur. (British data; see Chapter 9, Section C-3.)

i. AT CONCENTRATIONS OF ABOUT 115 ug/m³ (0.040 ppm) of sulfur dioxide (annual mean), accompanied by smoke concentrations of about 160 ug/m³, *increase in mortality* from bronchitis and from lung cancer may occur. (British data; see Chapter 9, Section C-2.)

8. Lead, *supra* note 6, at 84.

report concerning this point and has set forth levels of medical concern in regard to childhood lead exposure.⁹

It is very easy to see that lead, particularly in young children, is a very definite hazard and one that must be prevented.

Cadmium and cadmium compounds are known to be toxic to humans even though the exact nature of the biological action of cadmium is not fully understood. Cadmium when entering the body through the respiratory system can produce the following injuries to man:¹⁰ pulmonary emphysema; bronchitis; kidney damage; and gastric and intestinal disorders.

In fact, it has been stated that there is no system or function of the human organism that cannot be damaged when subjected to an effective concentration of environmental cadmium.¹¹

In addition to cadmium, arsenic and its compounds are known to be toxic to humans.¹² Airborne particulates containing arsenic dust can cause irritation of the skin and mucous membranes and,

9. Health Services and Mental Health Administration, Public Health Service, HEW, Control of Lead Poisoning in Children 4-7 (1971).

Where resources permit, all children who in screening programs are found to have blood lead values of 40 to 49 ug per 100 ml of whole blood should be recalled immediately for evaluation. This evaluation should include another determination of blood lead and inquiry concerning pica and the child's current exposure to lead in his home and in the homes that he frequently visits. Exposure may be significant even in the absence of a history of pica since parents may be unaware of such ingestion, or unwilling to admit it. X-ray of the abdomen is useful in confirming current or recent ingestion of lead.

All children who in screening programs are found to have blood lead values of 50 to 79 ug per 100 ml of whole blood should be referred immediately for evaluation as possible cases of lead poisoning. Physicians in charge of such evaluation have the responsibility for making a diagnosis of lead poisoning in these children. Symptoms of lead poisoning—such as abdominal pain, anorexia, constipation, and those of central-nervous-system (CNS) origin—are frequently absent in this group of patients. If any of these symptoms are present and cannot be explained otherwise, the diagnosis of lead poisoning should be considered.

The U.S. Public Health Service recommends that all children found to have a blood lead concentration of 80 ug or more per 100 ml of whole blood, regardless of the presence or absence of clinical symptoms or of other laboratory findings, be considered as unequivocal cases of lead poisoning and that they be handled as medical emergencies. They should be hospitalized immediately for chelation therapy. This emphatic recommendation is made because the risk of acute lead encephalopathy in this group is great, the onset of the disease is unpredictable, and its course is fulminant. If encephalopathy develops, at least 40% of these children will sustain severe and permanent brain damage. Treatment prior to the onset of encephalopathy may improve this grim prognosis.

10. Consumer Protection and Environmental Health Service, Public Health Service, HEW, Preliminary Air Pollution Survey of Cadmium and Its Compounds vii (1971).

11. *Id.* at 2.

12. HEW, Protection and Environmental Health Service, Preliminary Air Pollution Survey of Arsenic and Its Compounds vii (1969).

hence, dermatitis. Mild bronchitis and nasal irritation are also common symptoms of arsenic poisoning.¹³

VEGETATION

In addition to the adverse effects that pollutants exercise on property and man, there is likewise an adverse effect on vegetation with which the attorney must become aware.

Sulphur dioxide is the chief culprit here. Sulphur dioxide may cause acute or chronic leaf injury to plants.¹⁴ Acute injury, produced by high concentrations for relatively short periods, usually results in injured tissue drying to an ivory color. It sometimes results in a darkening of the tissue to a reddish brown. Chronic injury, which results from lower concentrations over a number of days or weeks, leads to pigmentation of leaf tissue, or leads to a gradual yellowing or chlorosis in which chlorophyll-making mechanisms are impeded. Both acute and chronic injury may be accompanied by the suppression of growth and yield.¹⁵

GENERAL PROBLEMS ARISING DURING TRIAL OF AN INDUSTRIAL AIR POLLUTION CASE

Many times the trial attorney will be able to establish a pattern of violations which may be laid to rest at the feet of a specific industrial polluter. These may usually be developed as previously mentioned by use of up and downwind high volume air samplers, high volume ambient air samplers and opacity readings by certified smoke readers.

In many cases, the attorney may be faced with the introduction into evidence of each up and downwind filter, each ambient air filter and each opacity reading made by the appropriate enforcement officials. In a large pollution case this may well amount to days of testimony by the individuals who actually compiled the data and might well include the following individuals:

1. The engineer or members of his staff who ran the upwind and downwind tests.
2. The engineer or member of his staff who is in charge of high volume ambient air sampling.

13. *Id.* at 2.

14. HEW, *supra* note 7, at 160.

15. *Id.* at 160.

3. The engineer or member of his staff who actually made tests for opacity violations.
4. In addition, the chemist or lab technician who made the analysis of the filters involved may be needed.

Faced with a problem of such prolonged testimony, the trial attorney would do well to explore the possibility of other methods of getting such records and data into evidence. In Texas, we are able to avoid such laborious courtroom gymnastics by use of a state statute.¹⁶

INTRODUCTION OF PROOF OF INJURY

In addition to the technical violations of air pollution statutes that must be dealt with by the trial attorney, the proof of potential injury or injuries from pollutants must also be considered and dealt with in the courtroom.

In considering the proof of injury or potential injury to humans, the trial attorney must explore the use of medical records, hospital records and testimony of a treating doctor.

In offering medical and hospital records into evidence, the attorney can establish injury to people and when this evidence is coupled with expert testimony from a physician, causation of such injury may also be established.

16. Tex. Civ. Stat. Ann. art. 3731(a) (Supp. 1971).

Article 3731a. Official written instruments, certificates, records, returns and reports; foreign laws.

Section 1. *Domestic Records.* Any written instrument, certificate, record, part of record, return, report, or part of report, made by an officer of this State or of any governmental subdivision thereof, or by his deputy, or person or employee under his supervision, in the performance of the functions of his office and employment, shall be, so far as relevant, admitted in the courts of this State as evidence of the matter stated therein, subject to the provisions of Section 3.

Section 2. *Federal, Out of State, and Foreign Records.* Any written instrument which is permitted or required by law to be made, filed, kept or recorded (including but not limited to certificate, written statement, contract, deed, conveyance, lease, concession, covenant, grant, record, return, report or recorded event) by an officer or clerk of the United States or of another state or nation or any governmental subdivision of any of the foregoing, or by his deputy or employee; or by any Notary Public of a foreign country in a protocol or similar book in the performance of the functions of his office, shall, so far as relevant, be admitted in the courts of this State as evidence of the matter stated therein, subject to the provisions in Section 3.

Section 3. *Notice to Adverse Party.* Such writing shall be admissible only if the party offering it has delivered a copy thereof, or so much of it as may relate to the controversy, to the adverse party a copy thereof, or so much of it as may relate to the controversy, to the adverse party a reasonable time before trial, unless in the opinion of the trial court the adverse party has not been unfairly surprised by the failure to deliver such copy.

Property damage is also an important item to be considered in proof of injury from a pollutant. The attorney should approach this problem in cooperation with a sanitary engineer and have engineering progress reports prepared by the engineer for introduction into evidence at the proper time. It is also suggested that the engineer be prepared to give his opinion based on his reports to again establish causation of such injury.