

# A LAWYER'S PERSPECTIVE ON RETROSPECTIVE EXPOSURE ANALYSIS

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## Introduction

With the ever-increasing numbers of bankruptcies of former asbestos products manufacturing companies, the focus of the asbestos personal injury litigation is changing. No longer can plaintiffs look to the big thermal insulation defendants for damages. With the bankruptcy of one of the last great "target" defendants in October 2000, the playing field has changed.

The peripheral defendants of the 1990s are now the target defendants of the new millennium. What can be done to defend the peripheral defendants? How can plaintiff's counsel convince a jury that exposure to a peripheral defendant's products was substantial and contributed to the disease. Retrospective Exposure Analysis is a new tool for trial lawyers to use to quantify past exposures to asbestos.

This paper is intended to discuss the science surrounding REA, the admissibility of the expert testimony and the fact gathering necessary to support the expert's opinion.

### **D) Admissibility of Evidence - How can the evidence and the expert in a Retrospective Exposure Analysis overcome the standards set forth in *Daubert v. Merrill Dow Pharmaceuticals, Inc.* and in *Frye v. United States*?**

When a disputed issue involves data beyond the knowledge of a lay juror, parties to a lawsuit may present testimony by expert witnesses. Specifically with regard to a Retrospective Exposure Analysis, expert testimony from industrial hygienists may be utilized to prove or disprove a plaintiff's past exposure to toxic chemicals.

The significant issues of expert testimony include a judgment of 1) what topics are proper for this kind of testimony; 2) who should be authorized to testify as an expert; 3) what types of data may an expert rely upon to formulate an expert opinion; and 4) whether the form of the testimony should be restricted.

Element #3 listed above is the focus of a court in admitting retrospective data. When a court has determined that a case involves a topic on which expert testimony

would be helpful to the factfinder and the expert witness is suited to give this type of testimony, the expert witness must conform with the requirements of Federal Rule of Evidence 703, which states as follows:

*The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.*

With regard to testimony that is rooted in information the expert obtains, there is no obligation that this information be admissible in evidence so long as it is the type of data that experts in the field reasonably rely on in forming opinions.

The *Daubert* case requires the trial judge to scrutinize the scientific reliability of the evidence presented. Under *Daubert*, a court must decide the admissibility of scientific evidence by evaluating the underlying validity of certain aspects of the evidence – the scientific method and the application of that method. Scientific testimony must be based on a principle that supports what the testimony purports to exhibit, and there must be a showing of another type of validity - the production of compatible results from successive applications of the principle.

Judges, acting as gatekeepers to the proposed evidence, can consider whether the theory can be tested, whether the theory has been tested in the past, whether the theory has general acceptance in the scientific community (which is the crux of the *Frye* test, discussed *infra*), whether the expert's evidence has been submitted to peer review in a scientific community, and whether the error rate is too high.

The above considerations are tied to *Rule 702-Relevance*, as a judge must determine if the offered evidence is anchored to the facts of the case and whether it will assist the jury in resolving a factual dispute.

Even though retrospective exposure assessments have undergone and withstood expert peer review in the scientific community, each case still may be vulnerable to a Judge's finding in a *Daubert* pre-trial hearing held by judges. Therefore, proponents of the retrospective data and methodology should be made aware of a streamlined approach to overcome a *Daubert* challenge.

The issue of admissibility can be streamlined into two issues:

- i) *Is the methodology used to retrospectively estimate the exposure dose supported by scientific reasoning?*

It is clear that peer review of Retrospective Exposure Assessments is consistent because the methods have been supported in many scientific papers. In fact, this methodology has been used extensively by industrial hygienists for, not only epidemiological studies, but also single case exposure studies, of many hazardous substances. With respect to asbestos exposure studies, there has been extensive usage of retrospective exposure estimation, thereby making it a valid methodology based on its accepted scientific reasoning.

- ii) *Is the estimate based on reliable data?*

One key to withstanding a *Daubert* attack is to have enough data and to have reliable data. There are at least two ways to collect reliable data. One way is to have atmospheric air samples taken and analyzed at the time of the toxic exposure to certain workers. This sampling and analysis, of course, is rarely, if ever, conducted or accessible in business records. As a result, it is not a primary methodology of obtaining reliable data. Plaintiff's attorneys will tend to emphasize that relevant and timely sampling and analysis may not have been undertaken by anyone or is not available to anyone, since many alleged exposures, especially with regard to asbestos, occurred several years prior to the bringing of the suit. Due to the lack of this hard data, these attorneys will argue that the actual airborne concentration cannot, and therefore, should not be estimated by industrial hygienists. If there were data at every work site for every exposure scenario, there, of course, would be no need for a scientific retrospective analysis.

The second way to collect reliable data is to obtain information based on a detailed description of the activities and work conditions at the time of the alleged exposure, in order for an industrial hygienist to reconstruct exposure scenarios. For instance, there are federal governmental studies where measurements of dose

were taken. If, for example, the measurements were taken at the Boston Ship Yard, these measurements may be applicable to the similar work conditions at the Philadelphia Naval Ship Yard, where the injured party may have worked. Industrial hygienists can then extrapolate the data. Work conditions such as ventilation or whether the plaintiff worked with other trades in the area, as well as the frequency and duration of the toxic exposure are all relevant factors to deduce an appropriate dosage during the relevant time period. The information data is reliable and enables experts, such as industrial hygienists, to formulate an opinion with respect to retrospective exposure analysis. As long as one can show the data is reliable, the evidence will survive prong #3 of the *Daubert* analysis.

Of course, while *Daubert* is applied in federal cases, the *Daubert* test is also used in certain state courts. Where state courts have not adopted the *Daubert* rule, it is likely that the “*Frye* test” has been adopted. The *Frye* test was formulated originally in *Frye v. United States*, 293 F. 1013 (D.C. Cir. 1923). When an expert’s testimony is based on data from scientific experiments or procedures, such as in the case of Retrospective Exposure Analyses, the *Frye* test requires that the proponent of the evidence show that the experiments or procedures are generally accepted in their field. In this test, consensus of scientists in the expert’s field controls the admissibility of the testimony. When the testimony is based on cutting edge technologies or procedures, the theories will be rejected. Since Retrospective Exposure Assessment is not a cutting edge procedure, it is likely to survive attack under the *Frye* test.

## ***II) How does one gather this data?***

One can obtain data to estimate exposures retrospectively in several ways. One way is direct testimony from the personal knowledge of the plaintiff through the use of deposition testimony. Other data can be gathered from assessments, which originate in personnel files, exposure or dose monitoring reports, social security records and scientific journals and literature.

Detailed plaintiff/co-worker depositions are critical to the function of the industrial hygienist, whose ultimate job will be to provide expert testimony on retrospective exposure analysis. Job and task details strengthen the Retrospective Exposure Analyses. Questioning and discovery requests should focus around the following information in order for the industrial hygienist to estimate the retrospective exposure:

- product specific information (from manufacturer)
- occupational history (high school to retirement, and moonlighting, if applicable)
- job descriptions
- task descriptions
- task frequency
- job/task duration
- product(s) used
- exposure mitigation
- other activities/trades in the work area(s)
- intensity of each exposure
- duration and frequency of exposure
- proximity of the plaintiff to the source of the exposure
- proximity of the plaintiff to other sources of exposure

With regard to every task for every job (including non-asbestos exposure tasks in asbestos exposure cases), ask:

- What tools did you use?
- What tasks were performed in each job?
- What machines did you use?
- What was the size of the work area?
- How was the work area ventilated?
- Were there roof vents or fans?
- What was the temperature in the work area?
- How did the job or tasks change over time?
- How did the workplace change over time?

- Did the products change over time?
- How long was the work day?
- How long were breaks?
- What hobbies do you engage in?
- What other substances did you work with?
- How were those chemicals/substances packaged?
- How were those substances/chemicals used?

These questions, if asked in the deposition, will be critical to forming a Retrospective Exposure Analysis. With the proper data gathered, the industrial hygienist can begin his/her retrospective analysis accordingly. The goal of retrospective exposure assessment is to determine the cumulative occupational exposure dose for an individual. With this goal in mind, the attorney can work backwards to get data helpful to the industrial hygienist. *Exposure dose* is the product of the *airborne exposure concentration* multiplied by the *exposure duration* (expressed in years).

#### Exposure concentration

To determine the exposure concentration, certain elements must be known before the industrial hygienist can make a determination on retrospective analysis. These elements can be discovered by the attorneys on the case via discovery tools. Certain factors which, if known, will help to estimate the asbestos airborne concentration to which a worker may have been exposed include the following:

- the years in which the work occurred.
- the asbestos-containing products being used or handled by the worker.
- the worker's trade or union membership.
- the worker's duties.
- the location of the work.
- the ventilation used in the workplace.
- the use of masks/respirators.

Aside from deposition questioning and obtaining the first-hand personal knowledge of the plaintiff or co-workers, another main source of estimating the exposure concentration is the scientific literature. Many asbestos exposure measurements have been made historically, the majority of these having been made since the 1970s. Earlier data are scarce. Both published and unpublished sources may be utilized to determine the exposure concentration. Since 1976, about 100 papers have been published considering

issues of REA effectiveness. The scientific community uses REA and relies upon it regularly in scientific publications. Through research, estimations can be made.

As substitutes for non-asbestos materials have been introduced in insulation work, current asbestos exposures have significantly decreased in the workplace and at home. The question becomes how can exposure be estimated and/or calculated if no specific exposure measurements were made at the time of the actual exposure. To answer this question, an extrapolation methodology is needed. Thus, available exposure data from published research papers reveals that a time-weighted average exposure level of 3 fib/cc for industrial and commercial insulators in the mid to later 1960s becomes the base-line standard on which estimates of insulator exposure *in other time periods* can be based. Likewise, dust studies of many other occupations have been produced and published and can be used in calculating REA. Also, standards can be used for exposures in other workplaces.

It is important to consider the time-weighted average rather than peak exposures in dose calculations because samples seized over long time periods produce concentrations low when compared with current or past asbestos standards. Time-weighted averages are a must when utilizing REA.

### Exposure Duration

The other necessary factor in calculating the exposure dose is the exposure duration. As you can see from the proposed discovery requests in deposition questioning, both exposure frequency and duration are critical factors in showing the extent of asbestos exposure of a given plaintiff. While the main sources of duration are depositions of the plaintiff and the co-workers, other sources are social security records, personnel records and union records.

Of the two factors comprising exposure dose, the exposure duration is more variable than the exposure concentration. If the plaintiff worked the same job for many years, duration can be expressed in terms of years. But, if the plaintiff had numerous jobs with disproportionate durations, the exposure duration becomes more complex to

estimate. Exposure duration evidence can be useful in assessing an individual defendant's culpability for an injury.

### ***III) Once evidence is gathered, how is evidence used?***

There are three (3) primary ways to use the evidence.

#### *Substantial Contributing Factor*

One way to utilize this evidence gathered from a Retrospective Exposure Assessment is to assert an analysis that one source of exposure is a substantial contributing factor while another is not. For example, an individual who lives 70 years in an urban area where the average ambient level of asbestos is .0005 fib/cc would experience a cumulative lifetime exposure dose of .2 fib•yr/cc. All experts agree that exposure to asbestos in the ambient air is incapable of causing disease. It is improbable that an exposure source that contributes less total dose than the ambient air exposure is a substantial contributing factor in a plaintiff's disease.

A defense attorney may attempt to prove that exposure to his/her clients' products was not a substantial contributing factor to plaintiff's disease. For example, if you represent a gasket client and the airborne asbestos generated from this gasket is less than the ambient air asbestos concentrations, then your client is off the hook because we know that ambient air does not cause or contribute to asbestos-related diseases.

#### *Is the exposure above or below the threshold?*

An important use of exposure reconstruction is to compare a worker's estimated cumulative lifetime exposure dose with the standard threshold doses necessary to cause an asbestos-related disease.

For example, for asbestosis, the lowest *cumulative lifetime exposure* doses at which asbestos-related diseases have been observed is 10 to 25 fib•yr/cc. This value is the *threshold dose* for a sensitive individual. Among 100 individuals exposed to asbestos at a cumulative lifetime dose of 25 fib•yr/cc, only one will develop asbestosis. At

*cumulative doses* (over a lifetime) of 10 fib•yr/cc, the incidence rate for asbestosis is less than one in one thousand. Where the Retrospective Exposure Assessment as calculated by the expert witness is below the threshold limits, a persuasive argument can be made that the product in question did not contribute to the plaintiff's disease, and vice versa.

### Apportionment of Cause

A final use of retrospective exposure assessments is to apportion cause between several sources of exposure. This works best when the sources of exposure are distinguishable. For example, the principal exposure source while painting drywall may be a joint compound. Therefore, a defense attorney may try to point the causation to manufacturers of joint compound, rather than gasket manufacturers, who also may be parties to the lawsuit.

Retrospective exposure assessments can be useful when there are several exposure sources. As an example, the exposure of a carpenter to airborne asbestos from asbestos cement siding could be far more severe than that from asbestos containing roofing products. Retrospective assessment allows apportionment of exposure from different time periods for the same type of work. Some jurisdictions require juries to assess damages based upon the defendant's contribution to the injury. In these jurisdictions, a calculation that a defendant's products contributed only 1% to the cumulative lifetime exposure would be very helpful in defending the peripheral defendant, since the resulting award would be minimal.

### Conclusion

Retrospective Exposure Analysis has been recognized in the scientific literature for the last 25 years. REA was used in the asbestos property damage litigation and is gaining in popularity in the personal injury litigation. A proper appreciation of its usefulness and shortcomings is a must for attorneys in the asbestos personal injury litigation. You should expect to see many more industrial hygienists at trial on both sides of the aisle.