The FELA Case for Cancer Caused by Environmental Tobacco Smoke and Diesel Exhaust

by William P. Gavin

I. Introduction

For decades, environmental tobacco smoke (ETS)\(^1\) and diesel exhaust were ubiquitous pollutants in the workplaces of America’s railroad employees. The International Agency for Research on Cancer (IARC) has characterized both pollutants as Group 1 carcinogens.\(^2\)

The State of Illinois\(^3\) has declared:

[T]obacco smoke is a harmful and dangerous carcinogen to human beings and a hazard to public health. Secondhand tobacco smoke causes at least 65,000 deaths each year from heart disease and lung cancer according to the National Cancer Institute. Secondhand tobacco smoke causes heart disease, stroke, cancer, sudden infant death syndrome, low-birthweight in infants, asthma and exacerbation of asthma, bronchitis and pneumonia in children and adults. Secondhand tobacco smoke is the third leading cause of preventable death in the United States. Illinois workers exposed to secondhand tobacco smoke are at increased risk of premature death. An estimated 2,900 Illinois citizens die each year from exposure to secondhand tobacco smoke.

The General Assembly also finds that the United States Surgeon General’s 2006 report has determined that there is no risk-free level of exposure to secondhand smoke; the scientific evidence that secondhand smoke causes serious diseases, including lung cancer, heart disease, and respiratory illnesses such as bronchitis and asthma is massive and conclusive.…

Lung cancer is caused by both ETS and diesel exhaust according to IARC. Also, scientific literature shows workplace exposures to ETS and diesel exhaust have been implicated in other cancers and non-malignant diseases. There is evidence that the pollutants may cause:

**ETS:**
- Coronary heart disease;\(^4\)
- Breast cancer;\(^5\)
- Nasal sinus cancer;\(^6\)
- Oropharyngeal cancer;\(^7\)
- Laryngeal cancer;\(^8\) and
- Pancreatic cancer.\(^9\)

**Diesel Exhaust:**
- Bladder cancer;\(^10\) and
- Pancreatic cancer.\(^11\)

Polycyclic aromatic hydrocarbons (PAHs),\(^12\) a class of chemicals found in both ETS and diesel exhaust, are also implicated in cancers of other organs.

The 2006 Surgeon General’s report on “involuntary smoking” also contains this powerful statement:

Active smoking is firmly established as a causal factor of cancer for a large number of sites including lung, urinary tract, upper aerodigestive tract, liver, stomach, pancreas, and many others.… The absence of a threshold for carcinogenesis in active smoking, * * * the presence of the same carcinogens in mainstream smoke and sidestream smoke, and the demonstrated uptake of tobacco smoke constituents by involuntary smokers are compelling arguments for the hypothesis that secondhand smoke would increase the risk of cancer in other smoking-related sites in nonsmokers.\(^13\)

II. American Railroads and Other Employers Knew or Should Have Known of the Hazards of ETS and Diesel Exhaust Exposure Decades Ago

A. ETS Knowledge

The constituents of cigarette smoke have been well known since the Surgeon General published a report on smoking in 1967 entitled “The Health Effects of Smoking.”\(^14\) Cigarette smoke contains numerous carcinogenic substances including PAHs (e.g., Benzo(a)pyrene), N-Nitrosamines, Polonium 210, Selenium, and phenols.\(^15\)

In 1979, the Centers for Disease Control issued Current Intelligence Bulletin 31, entitled “Adverse Health Effects of Smoking and the Occupational Environment.” This bulletin concerns smoking tobacco products in the workplace, but also addresses “any by-products from their burning and/or use.” The bulletin states:

Smoking can interact with worker exposure to toxic materials found in the workplace resulting in more severe health damage than that anticipated from adding the separate influences of the occupational exposure and smoking. Asbestos provides one of the most dramatic examples of severe health damage resulting from interaction between
the smoking of tobacco products and workplace exposures.\textsuperscript{16}

In 1986, the United States Surgeon General issued the report “The Health Effects of Involuntary Smoking.”\textsuperscript{17} The report states in its summary, “Involuntary smoking is a cause of disease, including lung cancer in healthy nonsmokers. *** The simple separation of smokers and nonsmokers ** * may reduce, but does not eliminate, the exposure of nonsmokers to environmental tobacco smoke.”\textsuperscript{18}

The book Active and Passive Smoking Hazards in the Workplace was published in 1990.\textsuperscript{19} The author noted “More recently, the effects of inhalation of ETS by non-smokers have become a pressing public health concern. *** Many of the known toxic and carcinogenic agents found in mainstream cigarette smoke have also been shown to be present in sidestream smoke.”\textsuperscript{20}

In 1991, the National Institutes for Occupational Safety and Health (NIOSH) issued Current Intelligence Bulletin 54, “Environmental Tobacco Smoke in the Workplace: Lung Cancer & Other Health Effects.”\textsuperscript{21} The bulletin states “NIOSH therefore recommends that ETS be regarded as a potential occupational carcinogen in conformance with the OSHA carcinogen policy, and that exposures to ETS be reduced to the lowest feasible concentration. Employers should minimize occupational exposure to ETS by using all available preventive measures.”

B. Diesel Exhaust Knowledge

The capacity of the constituents of diesel exhaust to cause disease has been the subject of study literally for hundreds of years. Sir Percivall Pott was an English surgeon, and is thought to be the first to link an occupational exposure to cancer. He demonstrated in 1775 that young chimney sweeps were experiencing an increased rate of scrotal cancer due to their exposure to soot (containing PAHs) as they sat on chimneys to do their work. The advent of the diesel engine and the diesel era throughout the 1900s fueled continued research on the constituents of diesel exhaust and whole diesel exhaust.

The first known actual notice to the American railroad industry that diesel exhaust could be a carcinogen among railroad workers dates back almost sixty years. In 1955, Mr. Robert Straub, a general claims attorney for the Chesapeake & Ohio Railway Company, presented a paper entitled “Potential Dangers From Exposure To Diesel Locomotive Exhaust” to various claims representatives at a meeting of the General Claims Division of the Association of American Railroads (AAR).

To support his presentation, Mr. Straub cited numerous scientific and industry publications. \textsuperscript{22} His presentation was generally published in 1955 in a...
Diesel exhaust contains particulate matter consisting of tiny particles of unburned particles of carbon that appear as dark smoke or soot from the exhaust of a diesel engine. Many of these particles are small enough to be respirable (inhaled). More than 1,000 organic chemicals are attached to the respirable particles, including benzo(a)pyrene, PAHs, and nitrated PAHs. When breathed, the smallest of these respirable particles carry the carcinogenic chemicals deep into the lungs. Studies have shown that the PAHs on the respirable particles can be absorbed in the lungs and cause mutations in cellular DNA.

Physicians employed by American railroads continued to discuss the hazards of diesel exhaust at AAR meetings held in the 1960s, 1970s, and 1980s. Minutes from a 1965 meeting of the physicians list lung cancer as a possible illness caused by diesel exhaust. Minutes from other AAR meetings show that the physicians renewed their discussions of the hazards of diesel exhaust in the 1980s after the publication of several epidemiological studies demonstrating an increased risk of lung cancer among diesel exhaust exposed railroad workers.

In 1988, NIOSH issued Current Intelligence Bulletin 50, “Carcinogenic Effects of Diesel Exhaust,” where it is noted “NIOSH recommends that whole diesel exhaust be regarded as ‘a potential occupational carcinogen’…….” This warning was based, in part, on medical studies in the 1980s that showed an elevated incidence of lung cancer among railroad workers.

In 2002, the United States Environmental Protection Agency issued a report “Health Assessment Document For Diesel Engine Exhaust,” which concluded that diesel exhaust is “likely to be carcinogenic to humans by inhalation.” This comprehensive report notes its conclusion is based on the totality of evidence from human, animal and other supporting studies.

III. The Federal Employers Liability Act and Locomotive Inspection Act

A railroad worker who develops illness because of exposure to ETS and/or diesel exhaust in his workplace may have a cause of action against his employer railroad for compensatory damages. The Federal Employers Liability Act (FELA) provides that a railroad operating in interstate commerce whose negligence causes injury to an employee is liable for compensatory damages to the injured employee.29 Under the FELA, an occupational illness is considered an injury.30

The effect of a second Act of Congress, the Locomotive Inspection Act (LIA), requires that a locomotive operated on a railroad’s line be free of conditions which create unnecessary danger of personal injury.31 The failure to provide a locomotive that is safe to operate on the railroad’s line without unnecessary danger of personal injury violates the LIA, making the railroad strictly liable under the FELA. A railroad is also strictly liable when it fails to comply with regulations issued by the Federal Railroad Administration (FRA).32 Several regulations are applicable to diesel exhaust exposure cases. Section 229.7 of 49 C.F.R.33 states that the Federal Rail Safety Laws (e.g., the LIA):

make it unlawful for any carrier to use or permit to be used on its line any locomotive unless the entire locomotive and its appurtenances (1) Are in proper condition and safe to operate in the service to which they are put, without unnecessary peril to life or limb; and (2) Have been inspected and tested as required by this part.

Section 229.43 of 49 C.F.R., entitled “Exhaust and Battery Gases,” states “Products of combustion shall be released entirely outside the cab and other compartments. Exhaust stacks shall be of sufficient height or other means provided to prevent entry of products of combustion into the cab or other compartments under usual operating conditions.”

The LIA is a strict liability statute, unlike the FELA, and contributory negligence of the injured employee does not operate to reduce the recovery under the FELA.35 Assumption of the risk is not a defense in an action under the FELA. 45 USC §54.

IV. Evidence Necessary for a Submissible Case

The evidence in a suit brought by a railroad worker under the FELA for occupational disease due to exposure to harmful substances must show that the worker was exposed to the substance, that the railroad was negligent in causing or failing to eliminate the exposure, and that the exposure caused, in whole or in part, the illness. In a claim under the LIA, the evidence must show that an unsafe condition of a locomotive operated on the railroad’s line caused, in whole or in part, the illness. The presence of diesel exhaust in a locomotive cab being operated on a railroad’s line is a violation of the LIA, which establishes a prima facie LIA violation.36 There is no reported similar ruling for ETS in a locomotive cab, but the Surgeon General’s statement that there is no risk-free exposure to ETS is a significant basis for the assertion that exposure to ETS while occupying a locomotive operated on a railroad’s line is a violation of the LIA.

V. Exposure

The plaintiff in an FELA suit will be an important source of information about his exposures. For example, a locomotive engineer will be able to explain the daily presence of diesel exhaust in the locomotive cab and the frequency that his co-workers smoked in the locomotive cab, in crew transportation vans, and in office buildings where he will have often reported for work and received assignments. A con-
ductor/brakeman will have had similar exposures in locomotives, as well as exposures to ETS when they rode in cabooses.

The greater the exposure that can be established, the stronger the case will be, since most occupational diseases due to ETS and diesel exhaust are felt to be “dose response” diseases. Further, the greater the exposure, the more credible the case. It is always important to interview the plaintiff’s co-workers to identify witnesses who will corroborate the plaintiff’s testimony about exposure.

Exposures to diesel exhaust and ETS in railroad workers have been studied by a number of investigators. Two studies that considered the exposure of railroad workers to diesel exhaust also tangentially considered the presence of ETS in the workplace of a railroad worker.

VI. The Railroad’s Non-Delegable Duty Arises From Its Knowledge

Every railroad operating in interstate commerce has a continuous, non-delegable duty to provide its employees with a reasonably safe place in which to work. “This continuous duty to provide a reasonably safe place to work, while measured by foreseeability standards, is broader under the [FELA] than a general duty of due care.” The duty becomes more imperative as the risk to the employee increases.

The continuous duty of care requires a railroad employer to know the nature of the substances used in its business. Foreseeability is “an essential element” of negligence under the FELA. Thus, establishing the railroad’s actual or constructive knowledge of the hazards of ETS and diesel exhaust is crucial to a claim under the FELA.

Documents from the AAR and possibly, a railroad’s internal documents may show that the railroad had actual knowledge of the hazards of ETS and diesel exhaust. The 1955 claims minutes referenced above show that claims representatives from various railroads were told that diesel exhaust contains carcinogens, and that railroads should be concerned about its capacity for causing cancer. There are additional documents from the AAR which show that physicians employed by railroads discussed no-smoking policies and diesel exhaust throughout the 1960s, ‘70s, ‘80s and ‘90s.

A plaintiff is not required to establish the railroad’s actual knowledge of the hazards in its workplace to establish a prima facie case. The railroad may be found liable on the basis that it should have known of the hazards of substances in its work place, but failed to act reasonably in the face of this constructive knowledge. The availability of medical information about the hazards of a substance is one method of establishing constructive knowledge of the hazards. The United States Court of Appeals for the Tenth Circuit has stated:

But medical evidence was adduced and reference was made to medical publications which tended to show that for some time prior to the disability and death of the deceased, the fela case continued on page 44
it was known that inhaling fumes and mists containing vaporized oil may bring about lipoid pneumo-
nia. Accordingly, the continued
inhaling of the smoke and fumes
arising from the tank containing
quenching oil presented an indus-
trial hazard of which the defendant
was required to have knowledge.49

VII. Negligence

Once evidence of the railroad’s ac-
tual or constructive knowledge of the
hazards of ETS and diesel exhaust is
introduced, the focus turns to whether
the railroad acted reasonably in the face
of this knowledge. Evidence of the
railroad’s failure to educate its workers
about the hazards, failure to take steps
to minimize or eliminate exposures,
and failure to take steps to implement
a no-smoking policy will be some evi-
dence of negligence. The following al-
legations of negligence are typical in a
complaint from such a suit:

a. Negligently failed to provide Plain-
tiff with a reasonably safe place in
which to work; and/or
b. Negligently failed to provide plain-
tiff with safe or adequate equipment to
protect them against exposure to die-
sel exhaust and environmental tobacco
smoke; and/or
c. Negligently exposed plaintiff to
diesel exhaust and environmental to-
bacco smoke; and/or
d. Negligently failed to warn plain-
tiff of the hazards of exposure diesel
exhaust and environmental tobacco
smoke when it knew or should have
known of such hazards; and/or
e. Negligently permitted unsafe work
practices to become routine work prac-
tices; and/or
f. Negligently failed to implement
steps it knew would be effective to pro-
tect against, reduce, and/or eliminate
exposure to diesel exhaust and environ-
mental tobacco smoke.

The following allegations of viola-
tions of the LIA are typical in a com-
plaint from such cases:

a. Failed to provide plaintiff with lo-
comotives whose appurtenances were
in proper and safe conditions; and/or
b. Required plaintiff to work on or
near locomotives, which were unsafe
because they were contaminated with
diesel exhaust and environmental to-
bacco smoke; and/or
c. Required plaintiff to work on or
near locomotives with diesel exhaust
present in the cabs of the locomotives
in violation of 49 C.F.R. 229.43.

Again, the testimony of the plaintiff
and his co-workers will be important
evidence of the railroad’s negligence
and violations of the LIA.

It is also well established that evi-
dence of the practices of other rail-
roads is relevant to the issue of a de-
fendant railroad’s reasonable conduct.50
The practices of another railroad,
therefore, may be proved to show the
defendant railroad did not act reason-
ably. For example, if the defendant/
railroad did not institute a no-smoking
policy until 2002, evidence that another
railroad banned smoking in 1988 may
be some evidence of the defendant
railroad’s negligence.51
IX. Causation

The railroad’s negligence (or violation of the LIA) need only be a cause of the alleged injury to impose liability. It need not be the only cause, major cause, proximate cause, or even a significant cause.\(^5\) If the negligence or LIA violation is a cause to any extent, no matter how slight, the causation element is established.\(^5\) Accordingly, a submissible case can be established even if the worker was exposed to substances other than ETS and/or diesel exhaust, on the job or off the job, that might have contributed to his cancer.

Relatively recently, the United States Supreme Court affirmed the principle that the railroad is liable for the full extent of the injury if its negligence played any part in producing the injury.\(^5\) There is no apportionment of damages among the railroad and other tortfeasors/causes, if any.

IX. Expected Railroad Defenses

A defendant railroad can be expected to spend much of its efforts on the subject of whether the alleged exposures caused the disease alleged, especially if the disease is other than lung cancer. The railroad usually files a motion asking the court to rule that the opinions of the plaintiff’s experts should be excluded because the basis for their opinions and the methodology they used to reach their opinions are unreliable and scientifically unsound. The plaintiff’s attorney must foresee this by insuring that the plaintiff’s experts are reputable and have reliable and substantial evidence of exposures,\(^5\) have received and considered the plaintiff’s medical history and medical records, and have considered and relied on relevant epidemiologic literature.

Some railroads have conducted air monitoring tests in later years to detect constituents of diesel exhaust. These samplings, however, have been sporadic at best and likely will not have been made on the locomotives the plaintiff occupied or during his work on the locomotives or in his workplace. Because exposures to ETS and diesel exhaust are highly variable due to a variety of factors, a strong argument can be made that any such air monitoring samples are irrelevant to the case at hand.

X. Conclusion

While an FELA claim for cancer caused by exposure to ETS and/or diesel exhaust can be complex and challenging, there is a meritorious scientific basis for making such a claim. In addition to helping a stricken employee, a global benefit of such claims is that they create an impetus for railroads to provide safer workplaces.

Endnotes

1 Also known as second-hand tobacco smoke or involuntary smoking.
2 Carcinogenic to humans. There are currently 111 carcinogens in IARC’s group 1 classification. IARC classifies substances based on available scientific literature.
3 410 ILCS 82/5 (2012).
4 United States Surgeon General, *The Health Consequences of Involuntary Exposure*.

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sure to Tobacco Smoke (2006), 532.
5 Id., at 480.
6 Id., at 484.
12 Also sometimes referred to as polynuclear aromatic hydrocarbons.
15 Id., at 127-139. See also International Agency for Research on Cancer, Tobacco Smoking, 38 (Lyon: IARC 1986), 86-120.
18 Id., at 7.
20 Id., at 42.
23 Mr. Straub’s presentation can be found in the minutes of the General Claims Division’s Sixty-Sixth Annual Meeting held on May 4-6, 1955, compiled and maintained by the Association of American Railroads, pp. 63-72.
25 Minutes from the 1965 Forty-Fifth Meeting of the Medical and Surgical Section of the Association of American Railroads March 3, 4 & 5, 1965, pp. 151-53.
29 45 USC §51, et seq.
33 49 C.F.R. §229.7.
34 49 C.F.R. §229.43.
37 Major railroads phased out cabooses in the 1980s.
39 S.R. Woskie, et al., “Estimation of the Diesel Exhaust Exposures of Rail-


42 Bailey, 319 U.S. at 352-53.


45 For example, a June 6, 1984 memo from Dr. Thomas Davison (Illinois Central Gulf Railroad) to Marvin Pelo of the AAR states that smoking policies were discussed by the Environmental Health Committee of the AAR but no action was taken.


51 As of June 2013, 28 states had banned smoking in all enclosed public places. Illinois is among these 28 states. In Illinois, the Smoke Free Illinois Act went into effect on January 1, 2008, banning smoking in all enclosed workplaces, including bars, restaurants, and casinos, and within 15 feet of such places. The Act exempts certain retail tobacco stores, private and semiprivate rooms in nursing homes occupied exclusively by smokers, no more than 25% of designated smoking rooms in hotels/motels on the same floor, and private residences. Smoking is prohibited in private residences when defined as a place of employment such as when used for child care or foster care. Local governments may regulate smoking more strictly than the state.

Ten states had not enacted any statewide ban on smoking in non-governmental sites: Alabama, Alaska, Kentucky, Mississippi, Missouri (Missouri does have a clean air act), Oklahoma, South Carolina, Texas, West Virginia, and Wyoming.


55 It is usually advisable and effective to retain an industrial hygienist to evaluate the plaintiff’s exposure based on testimony of the plaintiff and coworkers in light of industrial hygiene principles. This report can then be supplied to the plaintiff’s causation experts to provide additional foundation for their causation opinions.

Bill Gavin concentrates his law practice in the litigation of FELA toxic exposure injuries, products liability, propane gas explosions, and general negligence claims. He is a 1980 graduate of St. Louis University School of Law and practices as Gavin Law Firm with offices in Belleville, Illinois and Memphis, Tennessee. Mr. Gavin is board certified by the National Board of Trial Advocacy in Civil Trial Advocacy and Pre-Trial Practice.