An Asbestos Parallel?

Diesel Exhaust—Recent Developments

By David N. Lutz

To attempt to find ways around existing precedent, mass tort plaintiffs' lawyers will no doubt take a closer look at diesel exhaust after the DEMS and the IARC proclamation.

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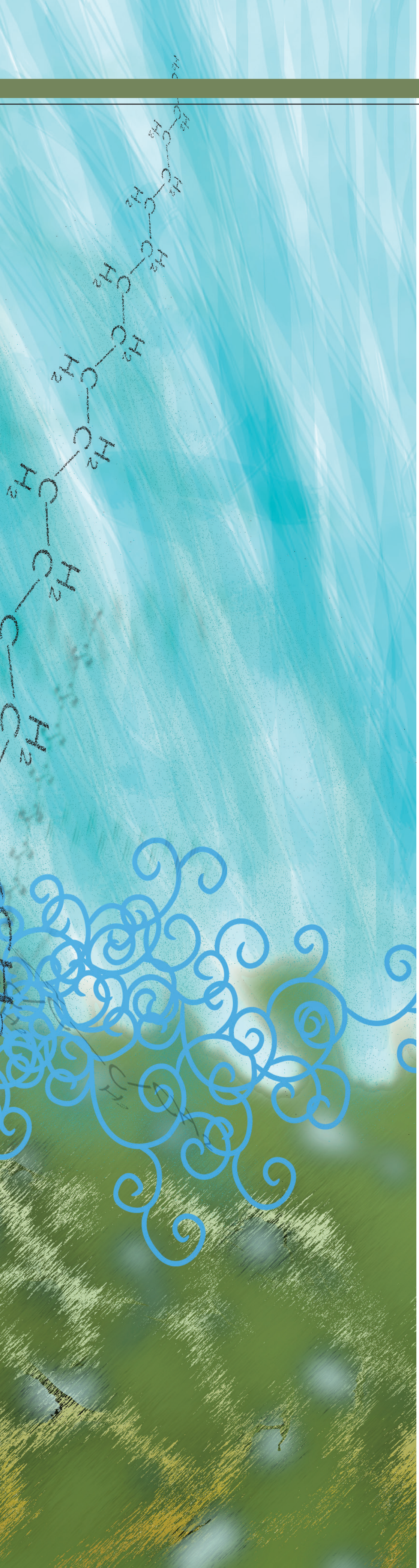

On June 12, 2012, the World Health Organization's International Agency for Research on Cancer (IARC) declared diesel exhaust a Group 1 "known carcinogen." *See* World Health Org., Int'l Agency for Res. on Cancer, IARC: Diesel Engine Exhaust Carcinogenic (2012). It did so based in part on the latest installment of the Diesel Exhaust in Miners Study (DEMS), published on June 6, 2012, by the National Institute for Occupational Safety (NIOSH) and the National Cancer Institute (NCI), which found an elevated risk of lung cancer in miners. IARC found "inadequate" evidence that gasoline engine exhaust is carcinogenic and it retains a Group 2B ("possibly carcinogenic") classification.

This pronouncement comes as the filing of asbestos cases has peaked and mass tort plaintiffs' lawyers are no doubt looking for the next toxic mass tort. The IARC pronouncement and the DEMS may prompt a reevaluation of diesel exhaust by the plaintiffs' bar. As a follow up to an article published here in November 2005, this article will summarize the recent developments.

What Is in Diesel Exhaust and Who Is Exposed?

The diesel engine, which Rudolph Diesel patented in Germany in 1892, revolutionized transportation. Well known for its excellent fuel economy, the diesel engine is used in trucks, buses, agricultural equipment, off-road heavy equipment, railroad locomotives, farm equipment, and ships. NIOSH has estimated that 1.35 million workers in the United States are exposed to diesel exhaust. Given the prevalence of cancer in our society and the frequency of smoking, many of these workers will develop lung cancer.

The emissions from diesel exhaust include gas constituents and particulate matter. Gas constituents include carbon monoxide, carbon dioxide, nitric oxide, nitrogen oxides, sulfur dioxides, aldehydes (formaldehyde), and hydrocarbons, including benzene, toluene, and polynuclear aromatic hydrocarbons (PAHs). Particulate matter consists primarily of carbon, but it also includes organic compounds adsorbed from fuel and oil, sulfates from fuel sulfur, and trace metals. Particulate matter results mostly from incomplete combustion of fuel hydrocarbons. The focus on diesel exhaust has concerned this particulate matter, not the gas constituents, which have not been shown to be carcinogenic.

The IARC Pronouncement and the DEMS

After summarizing various epidemiologic studies in a June 2012 meeting, IARC concluded that "[t]hese epidemiological studies support a causal association between exposure to diesel-engine exhaust and lung cancer." Lamia Benbrahim-Tallaa *et al.*, *Carcinogenicity of Diesel-Engine and Gasoline-Engine Exhausts and Some Nitroarenes*, 13 Lancet 663, 663 (2012).

Before 2012, a meta-analysis of epidemiological studies found a relative risk for lung cancer of 1.47 for those most likely to have been exposed to diesel exhaust and 1.64 among those with more than 10 years of exposure to diesel exhaust. *See* M. Lipsett & S. Campleman, *Occupational Exposure to Diesel Exhaust and Lung Cancer: A Meta-Analysis*, 89 Am. J. Pub. Health 1009, 1009–17 (1999). The EPA concluded that a relative risk of 1.4 was a reasonable estimate of occupational lung cancer risk. In June 2012, however, the DEMS provided additional data concerning exposures and incidence of disease.

Summary of the DEMS

The DEMS analyzed historical diesel exhaust exposure and lung cancer effects from diesel exhaust in a cohort of 12,315 workers in non-metal mining facilities. The study, published June 6, 2012, in the Journal of the National Cancer Institute, was carried out by the National Cancer Institute and NIOSH. Debra T. Silverman *et al.*, *The Diesel Exhaust in Miners Study: A Nested Case-Control Study of Lung Cancer and Diesel Exhaust*, 104 J. Nat'l Cancer Inst. 855, 857 (2012).

The DEMS dates back to 1992–1995, when NIOSH and the NCI, both part of the

U.S. Department of Health and Human Services, (DHHS), began developing the protocol for the study. *See Akzo Nobel Inc. v. United States*, No. 11-30812, 2012 WL 1889419, at * 2–8 (5th Cir. May 24, 2012) (summarizing the history of the DEMS and litigation over whether the DHHS properly provided required materials to interested parties and for peer review).

As to the admissibility of expert testimony that diesel exhaust causes multiple myeloma, a cancer originating in bone marrow plasma cells, there is a split of authority.

The DEMS began with a series of published articles in 2010 that quantified exposure to diesel exhaust in eight mines—three potash, three trona, one limestone, and one salt mine. The study found "a strong and consistent relation between quantitative exposure to diesel exhaust and increased risk of dying from lung cancer." Silverman, *supra*, at 863. It also found a dose-response relationship, noting that "[a]mong heavily exposed workers, the risk of dying from lung cancer was approximately three times greater than that among workers in the lowest quartile of exposure." *Id.* at 865. The study confirmed that a link between smoking and an exponentially greater risk of lung cancer: the risk of lung cancer among smokers smoking two or more packs of cigarettes per day was 12.41 times higher than the risk of lung cancer among people who never smoked. *Id.* at 860.

After controlling for smoking the study found a consistent increase in relative risk based on intensity, duration, and cumulative respirable elemental carbon (REC), a surrogate for diesel exhaust exposure. Individuals falling in the highest quartile of diesel exhaust exposure intensity were 2.28–2.40 times more likely to develop lung cancer than in the quartile with the least intensity of exposure. *Id.* at 862. The quartile with the most cumulative exposure had relative risks of 1.75–2.83 times more lung cancer risk than the quartile with the least cumulative exposure. *Id.* The quartile with the longest duration of diesel exhaust exposure had a 2.09 times higher risk of lung cancer than the group with the least exposure. *Id.* Among underground workers, the comparable relative risks were 3.69–5.43, 1.93–5.10, and 2.08. *Id.* at 864.

Weaknesses of the DEMS

The principal anomaly of the study was that the higher incidence of lung cancer occurred in the surface miners who experienced less diesel exhaust exposure than underground miners. Overall deaths from any cause were lower in the cohort than the general population, with underground workers having an even lower overall death rate than surface workers. Matthew D. Attfield *et al.*, *The Diesel Exhaust in Miners Study: A Cohort Mortality Study With Emphasis on Lung Cancer*, 104 J. Nat'l Cancer Inst. 869, 870 (2012). There were, however, elevated rates of lung cancer in the overall cohort (Standardized Mortality Ratio (SMR) = 1.26) and in both the underground workers (SMR = 1.21) and the surface workers (SMR = 1.33). *Id.* at 874. The lower end of the confidence interval was above 1.0 for all three groups. Although the lower rate for underground workers initially obscured a relationship, further review found a dose-response within each group.

The DEMS measured much higher diesel exhaust exposures in the underground mines since they are enclosed areas with worse ventilation than the surface. The underground group had nearly an order of magnitude higher REC exposure than the surface. *Id.* at 876–78, Tables 4, 5. Yet, the overall incidence of lung cancer was lower in the underground workers than in the surface workers despite higher and more intense REC exposure. When looking at the entire cohort, there was only a weak correlation for average REC intensity and no association for cumulative REC. In long-term workers, there was some correlation, but it was not completely linear.

The study did not explain why the rate of lung cancer was higher in the surface workers than in the underground workers with substantially higher exposure rates. The study speculated that the anomaly "may be attributable to aging and transformation of DE by sunlight, ozone, and other factors," which can make some exhaust components more toxic. *Id.* at 880. That the higher exposure group had less lung cancer is a major anomaly.

Another anomaly between the underground workers and surface workers relates to the nature of the apparent association between REC and lung cancer. Among underground workers, the association is with cumulative REC exposure, but not with average REC intensity. Among surface workers, however, the association is with average REC intensity, but not with cumulative REC exposure. *Id.* at 876–78, Tables 4, 5. The study has flaws that will no doubt be debated in expert depositions.

Occupations at Increased Risk

Increased incidence of lung cancer has been reported in several groups that work around diesel engines. A study of railroad workers found that their relative risk of lung cancer varied from 1.3 to 1.77. Francine Laden *et al.*, *Historical Estimation of Diesel Exhaust Exposure in a Cohort Study of U.S. Railroad Workers and Lung Cancer*, 17 Cancer Causes Control 911, 911–19 (2006). A cohort of 5,862 German potash miners had an overall relative of lung cancer of less than 1, but internal comparison of subcohorts showed a relative risk of up to 2.47 for groups with more exposure, although the trend is not fully linear. Angela Neumeyer-Gromen *et al.*, *Diesel Motor Emissions and Lung Cancer Mortality—Results of the Second Follow-up of a Cohort Study in Potash Miners*, 124 Int'l J. Cancer 1990, 1900–06 (2009). Other studies found increased risks of lung cancer in miners, heavy equipment operators, dock workers, forklift operators, port workers, railroad workers, and bus garage workers. *Id.* at 1904.

A meta-analysis of 11 case-control studies in Canada and Europe found that the highest group of diesel exhaust exposure had an odds ratio (OR) of 1.31 compared with the lowest group of exposure. Ann C. Olsson *et al.*, *Exposure to Diesel Motor Exhaust and Lung Cancer Risk in a Pooled Analysis from Case-Control Studies in Europe and Canada*, 183 Am. J. Respir. Crit. Care Med. 941 941–48 (2011). It was only in the top quartile of exposure, however, that the lower end of the confidence interval was above 1.0. *Id.* at 944, Table 3. The Olsson study pooled analysis did not demonstrate a clear linear relationship, and the confidence interval range included 1.0 for all exposure levels. *Id.* As the authors noted, there was a "small consistent association" between diesel exhaust exposure and lung cancer. *Id.* at 947.

A cohort of 31,135 workers in the trucking industry did not demonstrate increased risk of lung cancer in mechanics or hostlers. Eric Garshick *et al.*, *Lung Cancer and Vehicle Exhaust in Trucking Industry Workers*, 116 Envtl. Health Perspectives 1327, 1327, 1331 (2008). The likely explanation was that when mechanics are near trucks and equipment, the engines are off. *Id.* at 1331. The occupations found to be at highest risk were dock workers (Hazard Ratio (HR) = 1.30) and workers who did a combination of dock work and pickup and delivery work (HR = 1.40). *Id.* at 1329.

Diseases Other than Lung Cancer

There has been discussion of other studies and cases about whether other cancers or diseases are linked to diesel exhaust, and there are opportunities for *Daubert* motions.

Bladder Cancer

Studies have shown an increase in bladder cancer among truck drivers and suspected causes include smoking and drinking coffee. For one, "[a]n increased risk for bladder cancer was… noted in many but not all available case-control studies. However, such risks were not observed in cohort studies." World Health Org., IARC, *supra*, at 1. In the DEMS, the SMRs for bladder cancer were 1.09 in the overall cohort but .69 in the underground workers who had the highest exposure to diesel exhaust. The study found no association between diesel exhaust and bladder cancer. Attfield, *supra*, at 874.

In *Seaman v. Seacor Marine LLC*, 326 F. App'x 721 (5th Cir. 2009), a ship captain alleged that his bladder cancer was caused by diesel exhaust exposure. The trial court granted a motion to exclude expert testimony and then granted a summary judgment. The plaintiff's medical expert relied on two articles to support her opinions that diesel exhaust exposure causes bladder cancer. One of those studies found that smoking is the main risk for bladder cancer and that it is difficult to separate smoking-caused from exposure-caused bladder cancer. *Id.* The court found that the expert did not demonstrate general causation and affirmed the testimony exclusion and the summary judgment. *Id.* at 730.

Multiple Myeloma

As to the admissibility of expert testimony that diesel exhaust causes multiple myeloma, a cancer originating in bone marrow plasma cells, there is a split of authority. In *King v. Burlington Northern Santa Fe Ry. Co.*, 16 Neb. App. 544 (Neb. 2008), the trial court excluded testimony by the plaintiff's medical expert that the decedent's multiple myeloma was caused by 28 years of exposure to diesel exhaust. *Id.* at 546–58. The trial court granted the defense motion to exclude the expert and then granted a summary judgment, and the court of appeals affirmed both rulings. *Id.* at 558. But the Nebraska Supreme Court reversed. *See King v. Burlington Northern Santa Fe Ry. Co.*, 277 Neb. 203, 239 (Neb. 2009). After an extensive discussion of epidemiology, general and specific causation, and the Sir Bradford Hill criteria, the court, applying *Daubert*, held that requiring a study to show a relative risk of 2.0 or higher was too restrictive when the expert relied on a study to support general causation. The court noted that a study need only show a relative risk of greater than 1.0. *Id.* at 215–33.The court held that the weakness of the association goes to weight, not admissibility, and an expert may rely on studies to support causation even if an underlying study itself did not reach a definitive causation conclusion. *Id.* at 224. In determining specific causation, the expert must perform a reliable differential etiology by first "ruling in" potential causes to consider and then reliably ruling out potential causes to reach the most likely cause. *Id.* at 238.

In Arkansas, however, expert testimony linking diesel exhaust to multiple myeloma is not scientifically reliable. In *Richardson v. Union Pacific R.R. Co.*, No. CA 10-591, 2011 WL 4477791 (Ark. Ct. App. Sept. 28, 2011), the Federal Employers Liability Act (FELA) plaintiff alleged that his multiple myeloma resulted from exposure to various toxins, including diesel exhaust, creosote, and pesticides. *Id.* at *1. The trial court excluded the plaintiff's industrial hygiene and medical testimony and granted a summary judgment. The court of appeals affirmed these rulings. The court analyzed various studies evaluating multiple myeloma and concluded that it had not been confirmed to be an established health risk for railroad workers. *Id.* at *13–15. The court held that the experts' opinions did not meet the *Daubert* standards because their literature citations were selective and misconstrued, they failed to consider contrary studies or explain why they did not consider such studies, and they relied on studies whose authors themselves qualified their conclusions. *Id.* at* 18. The court also noted that the experts could not estimate the plaintiff's actual exposure levels. *Id.* The court held that "[t]he fact that some studies showed that higher levels of benzene could cause multiple myeloma does not prove that the lower levels of that chemical found in diesel exhaust and fuel played a role in causing appellant's disease." *Id.* at *34. The court held that the experts' opinions were "nothing more than guesswork" and were unreliable and unhelpful. *Id.* at *19.

In *Aurand v. Norfolk Southern Ry. Co.*, 802 F. Supp. 2d 950 (N.D. Ind. 2011), two plaintiffs had multiple myeloma and one had leukemia. The plaintiffs' expert opined that the diseases were caused by chemical exposures, including several constituents of diesel exhaust, including PAHs, benzene, and carbon tetrachloride. *Id.* at 955. The court found that the expert could not identify any studies showing that railroad workers had an increased risk of developing multiple myeloma and the expert could not quantify the plaintiffs' exposures. *Id.* at 957, 960. The court excluded the expert testimony and granted a summary judgment. *Id.* at 964–65.

Other Diseases

There have been a few cases alleging nonmalignant disease. In *Shiver v. Georgia & Florida Railnet, Inc.*, 287 Ga. App. 828 (Ga. Ct. App. 2007), the Georgia Court of Appeals affirmed the exclusion of expert testimony that diesel exhaust caused reactive airways disease and affirmed a summary judgment, finding that the expert did not adequately investigate the exposure history and did not fully consider other potential causes. *Id.* at 831.

Government Regulation

The government has established various regulations relevant to diesel exhaust.

Regulation of Employer Air Quality

Occupational Safety and Health Administration (OSHA) permissible exposure limits, NIOSH recommended exposure limits, and American Conference of Government Industrial Hygienists (ACGIH) threshold limit values apply to an employer, and they exist for certain constituents of diesel exhaust, such as carbon monoxide, carbon dioxide, nitrogen dioxide, nitric oxide, formaldehyde, and sulfur dioxide, though not for "diesel exhaust" per se.

Although the Clean Air Act allows California to adopt its own regulations that are more stringent than the federal regulations… California may do so only with EPA approval.

The Mine Safety and Health Administration first published diesel regulations for underground non-coal mines in 2001, implementing an interim limit for diesel exhaust particulate of 400 mg/m^3 effective July 2002 and a final 160 mg/m^3 as of January 2006. Particulate was measured as total carbon (TC), which includes both elemental carbon (EC) and organic carbon (OC). In rulemaking completed in 2005, the Mine Safety and Health Administration converted the diesel particulate matter limit of 400 mg/m^3 of TC to 308 mg/m^3 for EC, effective January 2007. The May 2006 Mine Safety and Health Administration final rule changed the interim limit to 350 mg/m^3 EC, effective January 2007, and extended the effective date of the 160 mg/m^3 TC standard to May 2008. Courts have since upheld the Mine Safety and Health Administration regulations of particulate as valid. *Kennecott Greens Creek Mining Co. v. Mine Safety and Health Admin.*, 476 F.3d 946, 961 (D.C. Cir. 2007); *Nat'l Mining Ass'n v. Mine Safety and Health Admin.*, 599 F.3d 662, 673 (D.C. Cir. 2010).

Regulation of Emissions from Diesel Engines

The U.S. Environmental Protection Agency (EPA) has implemented regulations of certain emissions from diesel engines under authority of the Clean Air Act, which was passed by Congress in 1963 and was amended by the Motor Vehicle Air Pollution Control Act of 1965 and other subsequent amendments. These standards vary depending on the type of vehicle or equipment and engine size.

With respect to on-road engines, regulation began with the EPA smoke standard applicable to 1970s vehicles. The EPA added a carbon monoxide standard and a nitrogen oxides (NO_X) standard in 1974. The EPA first regulated particulate from on-road diesel engines in 1988, and regulations were tightened in 1991 and 1994 for truck and bus engines, in 1996 for bus engines, and again in 1998 for all on-road diesel engines. In 2004, the EPA further regulated non-methane hydrocarbons and No_x.

For off-road diesel engines, regulation first began after Congress amended the Clean Air Act in 1990. *See Pacific Merchant Shipping Ass'n v. Goldstone*, 517 F.3d 1108, 1110 (9th Cir. 2008). Regulations followed in the 1990s, including, depending on engine size, limits on hydrocarbons, carbon monoxide, and No_x. Additional regulations limited emissions of CO and particulate and hydrocarbons and applied to engines of larger than 175 horsepower. By 1998, the EPA regulated carbon monoxide, particulate, and the combination of NO_x and non-methane hydrocarbons.

The first standards for railroad locomotive engines were adopted in 1997 and became effective in 2000. The 2008 regulation required that locomotives meet Tier 3 standards by 2011–2012 and meet Tier 4 standards effective in 2015. The EPA first regulated marine engines in 1999, and in 2003 the EPA developed No_x emission limits for Category 3 engines. In 2008, the EPA introduced Tier 3 and 4 emissions standards for marine diesel engines that are modeled on the Tier 4 on-road and off-road standards.

Regulation of Diesel Fuel

Section 7545 of the Clean Air Act regulates the sulfur content of diesel fuel. As of October 1, 1993, it prohibited the sale, manufacture, supply, or transport of motor vehicle diesel fuel "which contains a concentration of sulfur in excess of 0.05 percent (by weight) or which fails to meet a cetane index minimum of 40." 42 U.S.C. §7545(i)(1). The cetane index measures the ignition quality of diesel fuel; a higher number indicates easier starting and less initial smoking and knocking from the engine. "Cetane Index," Glossary, BP.COM, http://www.bp.com/glossarylinks.do?contentId=6000459&alphabetId=3&categoryId=6126007 (last visited Feb. 7, 2013). Heavy-duty diesel vehicles and engines from model years 1991 through 1993 require a sulfur content of 0.10 percent (by weight). 42 U.S.C. §7545(i)(3). Alaska and Hawaii may be exempted from these requirements with the approval of the administrator of the EPA. *Id.* at §7545(i)(4).

Section 7545 also requires the EPA to issue its own regulations regarding sulfur content requirements for motor vehicle diesel fuel, which can be found at 40 C.F.R. §80, subpart I. Under those regulations, motor vehicle diesel fuel must not have a sulfur content in excess of 15 parts per million (ppm). Sulfur content of 500 ppm is allowed, however, under the limited circumstances listed in sections 80.530–80.532, 80.552(a), 80.560–80.561, and 80.620. *Id.* at §80.520(c).

The EPA regulations further provide that motor vehicle diesel fuel must either have a minimum cetane index of 40 or a maximum aromatic content of 35 volume percent and must be free of certain red and yellow dye solvents, with limited exceptions listed in section 80.520(b). *Id.* at §80.520(a),(b). Additional provisions regarding small refineries, non-road- and nonhighway-use diesel, kerosene blenders, labeling requirements, and the EPA's diesel fuel credit program can be found throughout 40 C.F.R. §80, Subpart I and accessed at http://www.ecfr.gov/cgi-bin/text-idx?c=ecfr&sid=f4a7603e124963d6b62b453c42cb6492&rgn=div6&view=text&node=40:17.0.1.1.9.9&idno=40 (last visited Feb. 7, 2013).

Preemption

The successful defense of diesel exhaust litigation begins with preemption.

Off-road Equipment

If an engine is smaller than 175 horsepower, or if the equipment is a railroad locomotive, Clean Air Act §209(e)(1) provides that no state "shall adopt or attempt to enforce any standard or other requirement relating to the control of emissions from either of the following new nonroad engines or nonroad vehicles subject to regulation under this chapter." 42 U.S.C. §7543(e)(1). Thus, federal law expressly preempts state law.

For off-road equipment that §209(e)(1) does not encompass because it is larger than 175 horsepower and not a railroad locomotive, §209(e)(2) of the Clean Air Act provides that the EPA "shall" allow California to adopt more stringent regulations as long as it is not done arbitrarily, subject to EPA approval. 42 U.S.C. §7543(e)(2). Other states are allowed to adopt California's more stringent emissions standards. 42 U.S.C. §7543(e)(2)(B). The fact that California cannot regulate in this area without the EPA's authorization confirms that preemption applies. *See Engine Mfrs. Ass'n v. U.S. Envt'l Protection Agency*, 88 F.3d 1075, 1087 (D.C. Cir. 1996).

Courts have also found preemption under §209(e)(2) of the Clean Air Act in cases alleging diesel exhaust exposure from railroad locomotives. In *Middlesex Cnty. Health Dep't v. Consolidated Rail Corp.*, No. 08-4547, 2009 WL 62444 (D. N.J. Jan. 9, 2009), the plaintiff alleged that Conrail violated New Jersey health laws by allowing locomotives to idle in a yard. *Id.* at *1. The court granted the defense motion to dismiss, finding that federal law preempted the claims in the case. *Id.* at *3.

Although these provisions apply to "new" vehicles and equipment, the court in *Engine Mfrs. Ass'n* found that the implied preemption of §209(e)(2) applies not only to new vehicles and engines but also to existing vehicles and engines that were not new. *Id.* at 1087–93.

In *Ctr. for Cmty. Action and Envt'l Justice v. Union Pacific Corp.*, No. CV 11-08608, 2012 WL 2086603 (C.D. Cal. May 29, 2012), the plaintiffs alleged that the rail yard was a source of diesel particulate and alleged violation of the federal Resource Conservation and Recovery Act. *Id.* at *2. Since the Clean Air Act was not amended until 1990 to include locomotive emissions expressly and since the "locomotive rule" regulations did not pass until 1998, the plaintiff argued that if the Resource Conservation and Recovery Act did not apply, a "regulatory gap" would leave pre-regulation locomotives unregulated. The court granted the motion to dismiss, finding that the claims pertaining to both new and existing locomotives were preempted. The court rejected the plaintiff's argument that the emissions standards did not apply to locomotives already in service, finding that "[i]t is fanciful to suggest that, because Congress directed EPA to regulate emissions only from 'new' locomotives, it must have silently intended to authorize courts to impose additional regulation of all locomotives through RCRA [Resource Conservation and Recovery Act] citizen suits." *Id.* at *5 (internal quotation marks omitted).

A California court also struck down regulation of diesel exhaust from ships. In *Pacific Merchant Shipping Ass'n v. Cackette*, ocean shippers challenged California Air Resources Board regulations of particulate, nitrogen oxide, and sulfur oxide. No. Civ. S-06-2791, 2007 WL 2492681 (E.D. Cal. Aug. 30, 2007), *aff'd*, *Pacific Merchant Shipping Ass'n v. Goldstene*, 517 F.3d 1108, 1113 (9th Cir. 2008). The court examined the issue under Clean Air Act §209(e)(2), which the court concluded impliedly preempted state action. *Id.* at *7. The court reiterated that the implied preemption of §209(e)(2) applied both to new and existing engines that pre-dated the regulations. *Id.* *7–8. Although the Clean Air Act allows California to adopt its own regulations that are more stringent than the federal regulations, as mentioned, California may do so only with EPA approval. The court found that these regulations did not have EPA approval. Therefore, on the basis of preemption, the court enjoined enforcement of the regulations. The Ninth Circuit affirmed the holding, finding that §209(e)(2) preemption applied both to new and existing ship engines. *Goldstene*, 517 F.3d at 1115.

On-road Vehicles

On-road trucks are governed by §209(a) of the Clean Air Act, which provides that no state "shall adopt or attempt to enforce any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines…." 42 U.S.C. §7543(a). The regulations took effect in 1970. However, Congress preempted such claims as of 1967. *See Green Mountain Chrysler v. Crombie*, 508 F. Supp. 2d 295, 304 (D. Vt. 2007); *Pacific Merchant Shipping Ass'n*, 2007 WL 2492681, at *3.

> **Presumably because of** the preemption problems that the plaintiffs' bar faces in claims against manufacturers, plaintiffs have sought to assert claims in a way that might skirt Clean Air Act preemption.

In *Engine Mfrs. Ass'n v. South Coast Air Quality Mgmt. Dist.*, 541 U.S. 246 (2004), the U.S. Supreme Court evaluated air quality district rules that required local fleet operators including cars, trucks, public transit busses, garbage trucks, taxis, and heavy-duty on-road trucks to buy or lease only vehicles that met state motor vehicle pollution standards. The U.S. Supreme Court held that §209(a) of the Clean Air Act preempted the rules. *Id.* at 257–59. The U.S. Supreme Court specifically noted that it was not determining whether applying such rules to existing vehicles, "*e.g.*, to lease arrangements or to the purchase of used vehicles," was preempted under §209(a). *Id.* at 259. On remand, the district court found that the Clean Air Act did not preempt the rules because they fell within the market participant doctrine and therefore §209(a) did not cover them. *Engine Mfrs. Ass'n v. South Coast Air Quality Mgmt. Dist.*, No. CV00-09065, 2005 WL 1163437, at *11 (C.D. Cal. May 5, 2005). The court specifically noted that it was not addressing whether the rules were preempted to the extent that they applied to existing, used vehicles. In addition, "CAA [Clean Air Act] §209(a), which while very similar in its language, only preempts *new* road vehicles and engines. The [Supreme Court's] concern that regulations have effects on manufacturers in order to be preempted is understandable given the more limited preemptive effect of CAA §209(a)." *Pacific Merchant Shipping Ass'n*, 2007 WL 2492681, at *10 (citation omitted).

Unfortunately, it appears, at least on the surface, to the plaintiffs' bar, that asbestos and diesel exhaust litigation have some parallel.

In *In re Jackson v. General Motors Corp.*, 770 F. Supp. 2d. 570 (S.D. N.Y. 2011), city transit workers alleged injuries from diesel exhaust and sued various manufacturers of buses and diesel engines contained in them. The defendants brought a motion for judgment on the pleadings on the basis of preemption. *Id.* at 571. The plaintiffs abandoned claims of defectively designed engines, but they alleged that the defendants were negligent because their products did not meet the Clean Air Act standards and that the defendants negligently failed to warn about the dangers of diesel exhaust. The court granted the motion to dismiss. *Id.* at 579.

The *Jackson* court first noted that the Clean Air Act does not allow a private right of action for damages. *Id.* at 574. The court also found that a state common law claim that a manufacturer did not comply with the Clean Air Act is a state attempt to enforce the federal act, so the Clean Air Act preempts such a state claim. *Id.* at 574. The court found that §209(a) of the Clean Air Act preempted the plaintiffs' failure to warn claims as those claims "related to" the control of emissions. *Id.* at 577. Although Clean Air Act §209(d) allows states to regulate the use of motor vehicles, the court rejected the plaintiffs' argument that this provision allows lawsuits concerning emissions, distinguishing these claims from the states' rights to regulate the use of vehicles. *Id.* at 577. The court dismissed the case in its entirety and did not carve out any claims based on the vintage of the engine or the vehicle. The Second Circuit affirmed this district court decision on July 11, 2012. *See Butnick v. General Motors Corp.*, No. 11-1068, 2012 WL 2819330, at *2 (2d Cir. July 11, 2012).

Daubert Challenges to Experts

Under *Daubert*, a trial court provides a gate-keeping function to ensure that expert testimony is reliable and relevant and that the underlying reasoning or methodology is scientifically valid. Even the risks identified in the DEMS are relatively modest and occur only in the most highly exposed groups. By the time the studies divided the miners into such small subgroups, the bottom range of the confidence interval typically was below 1.0, and, therefore, it was statistically suspect. Attorneys may have opportunities to strike an expert testifying on general causation who proposes that diesel exhaust can cause a disease, and certainly on specific causation when the expert proposes that diesel exhaust caused a specific plaintiff's disease.

In *Brooks v. Ingram Barge Co.*, No. 4:07CV62, 2008 WL 5070243 (N.D. Miss. Nov 21, 2008), the lung cancer plaintiff had worked on Mississippi River vessels for 28 years. The defense moved to exclude the plaintiff's expert under *Daubert*. The court first examined the issue of general causation and took note of the various epidemiologic studies showing a relative of generally 1.3 to 1.7. *Id.* at *2. The court concluded that evidence that diesel exhaust can cause lung cancer was sufficient under *Daubert*. *Id.* at *4. The court noted, however, that the expert could not quantify the precise dose response or quantify the plaintiff's exposure. *Id.* at *5–6. Since the plaintiff had smoked for 50 years, the plaintiff's expert had to admit that smoking was a cause, but he opined that diesel exhaust and smoking have a synergistic effect—that the combined effect was more than just the sum of each risk separately. The expert based his opinion on one study, but the court noted concerns with the validity of that study and held that the theory that diesel exhaust and cigarette smoke have a synergistic effect on lung cancer did not pass the *Daubert* criteria. The court held that "[n]o reliable science has been presented to this court to support an opinion that an individual in the highest risk category was exposed to some unknown amount of a moderate carcinogen and to then find that the moderate carcinogen caused his cancer is simply unreliable." *Id.* at *6. The court held that the expert could "not bridge the gap between general and specific causation." *Id.* at *7.

Smoking and Attribution

The primary cause of lung cancer is smoking. It is unusual to find a lung cancer patient who did not smoke. In the Olsson study, which pooled the results of 11 case-control studies in Canada, only six percent of the 13,304 individuals with lung cancer had never smoked, compared with over 29 percent of the individuals in the control group. Olsson, *supra*, at 943. In the cohort of German potash miners, only two of 61 lung cancer cases occurred in individuals who did not smoke. Neumeyer-Gromen, *supra*, at 1902. In the DEMS, only 14 of the 198 lung cancer cases consisted of individuals who had never smoked, compared with 178 of the 666 individuals in the control group. Silverman, *supra*, at 861, Table 2.

If plaintiffs allege a synergistic effect between diesel exhaust exposure and smoking, defendants should cite *Brooks*, 2008 WL 5070243 (N.D. Miss. Nov 21, 2008). In addition, in the German potash miner cohort, scientists saw no synergistic effect, finding an overall relative risk for high exposure and smoking combined of 22.25, with the individual effects of 21.09 relative risk for smoking and 4.21 relative risk for diesel exhaust exposure. Neumeyer-Gromen, *supra*, at 1903.

The DEMS does not support synergism, either. In the category of greatest diesel exhaust exposure and the greatest smoking history, the diesel exhaust exposure raised the relative risk to 7.3 in individuals who never smoked, and smoking two packs per day among the group with least diesel exhaust exposure involved a relative risk of 26.79. Silverman, *supra*, at 865. The combined risk of the highest exposure to diesel exhaust and cigarettes, however, was 17.38, which is less than additive and does not indicate synergism. *Id.* Review of the six combinations of smoking history and diesel exhaust exposure in the DEMS reveals that two of the categories actually would have a lower combined risk than the sum of the individual relative risk of each. In two categories the numbers were virtually identical, indicating no synergism, and only in two categories did the combined risk exceed the sum of the individual risk of each. For those two categories, the confidence intervals showed that the combined effect could be less than the sum of the individual exposures.

Current Status of Litigation and the Effect of the DEMS

Presumably because of the preemption problems that the plaintiffs' bar faces in claims against manufacturers, plaintiffs have sought to assert claims in a way that might skirt Clean Air Act preemption. Plaintiffs have alleged Federal Employers Liability Act (FELA) claims against railroads for failure to provide safe workplaces. On June 13, 2012, within a week of the IARC finding release, plaintiffs filed a lawsuit in California against refiners and sellers of diesel fuel, citing the IARC pronouncement.

Plaintiffs have also attempted to create a diesel exhaust class action, and anyone defending a client against such an effort should review *Taylor v. CSX Transp., Inc.*, 264 F.R.D. 281 (N.D. Ohio 2007). In that Federal Employers Liability Act case, plaintiff railroad employees moved for class certification to include over 40 engineers and conductors who had been diagnosed with asthma, chronic obstructive pulmonary disease, or emphysema. *Id.* at 286. Applying the Federal Rule of Civil Procedure 23(a) prerequisites for class certification, the court found that the plaintiffs met the requirements of numerosity, commonality, and typicality and that the lead plaintiff adequately represented the class. *Id.* at 288–92. The court found, however, class certification was not appropriate under Federal Rule of Civil Procedure 23(b) because the predominant relief sought was money damages, and resolving the claims would involve many plaintiff-specific issues of injury, causation, and comparative fault, among others. *Id.* at 294. These issues that were unique to each plaintiff "overwhelm[ed] the common questions" that the plaintiffs sought to certify. *Id.*

Although the courts have shut down diesel exhaust litigation concerning certain categories of defendants, mass tort plaintiffs' lawyers will no doubt take a closer look at diesel exhaust after the DEMS and the IARC proclamation to attempt to find ways around existing precedent. Unfortunately, it appears, at least on the surface, to the plaintiffs' bar, that asbestos and diesel exhaust litigation have some parallel. Both involve airborne inhalants that have become increasingly regulated. Both involve the opportunity for revisionist "historians" to find evidence that someone, somewhere, long ago recognized a possible hazard and, therefore, everyone should have foreseen a hazard long ago. Through continued motion practice and further evaluation of DEMS weaknesses, however, diesel exhaust litigation should not become the next mass tort.

This article was submitted for publication several months ago, but was in the queue behind other articles. In the six months since these two important developments in diesel exhaust litigation, there has been little activity in case filings and court rules. There have been only a handful of case filings, most of them FELA railroad cases. There have also been few cases decided with respect to the issues discussed in this article. *See Lukesh v. Illinois Workers' Compensation Commission*, 2012 WL 6862927 (Ill Ct. App. 1st Dist. Dec. 28, 2012) (upholding the denial of workers compensation benefits where insufficient evidence linking lung cancer to diesel exhaust); *Hillsdale Environmental Loss Prevention, Inc. v. United States Army Corps of Engineers*, 702 F.3d 1156 (10th Cir. Nov. 28, 2012) (Army Corps methodology in assessing cancer risk from diesel exhaust had a rational basis, Corps was not required to use the methodology it had used in assessing a California permit and affirming decision to issue a dredge/fill permit).