No. 10-879

In The Supreme Court of the United States

GLORIA GAIL KURNS, Executrix of the Estate of George M. Corson, Deceased, and FREIDA E. JUNG CORSON, Widow of her own right,

Petitioners,

v.

RAILROAD FRICTION PRODUCTS CORPORATION and VIAD CORP.,

Respondents.

On Writ Of Certiorari To The United States Court Of Appeals For The Third Circuit

BRIEF OF *AMICUS CURIAE* GRIFFIN WHEEL COMPANY IN SUPPORT OF RESPONDENTS

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IDENTITY AND INTEREST OF *AMICUS CURIAE*

Griffin Wheel Company ("GWC") respectfully submits this brief as *amicus curiae*. The parties have filed with the Court letters of blanket consent to the filing of *amicus curiae* briefs.[1]

Prior to 1994, GWC sold and manufactured railroad brake shoes which were used on both locomotives and railcars. GWC is also the petitioner in another case pending before this Court on a petition for a writ of certiorari. *See Griffin Wheel Company v. Harris*, Case No. 10-520.[2] The *Harris* case involves virtually the same factual circumstances giving rise to this case, that is, a railroad employee who was allegedly exposed to asbestos from train equipment. Unlike this case, however, both locomotive and railcar parts (brake shoes) are at issue in *Harris*. Thus, GWC in that case relies upon the field preemptive effect of

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[1] Pursuant to Supreme Court Rule 37.6, *amicus curiae* Griffin Wheel Company discloses that no counsel for a party authored any part of this brief, nor did any person or entity other than Griffin Wheel Company, its members, its counsel, or its insurers (Travelers Insurance Company and Fireman's Fund Insurance Company) make monetary contribution to the preparation or submission of this brief.

[2] There is also a third case pending before this Court which raises the same issue as this case. *See John Crane Inc. v. Atwell*, Case No. 10-272. Both *Harris* and *Atwell* have been conferenced twice, but no ruling has been issued on the petitions for writs of certiorari. The cases are currently being held by the Court presumably to be addressed in light of the decision in this case.

both the Locomotive Boiler Inspection Act, 49 U.S.C., Subtitle V, Part A, Ch. 207, §§ 20701, *et seq*. ("LIA") ***and*** the Safety Appliance Act, 49 U.S.C., Subtitle V, Part A, Ch. 203, §§ 20301, *et seq*. ("SAA"). Here, because only locomotive equipment is involved, SAA field preemption is not raised. As explained below, the LIA and SAA are equally important in protecting the federal government's nationally uniform regulation of the railroad industry, and the field preemption analysis under both acts is identical. Therefore, GWC submits this brief in order to focus attention on the fact that in the field preemption context, the LIA and the SAA are inextricably linked, and the Court's decision in this case will effectively apply to a broader range of claims than only those involving locomotives and locomotive equipment. GWC will also address the fallacy of Petitioners' arguments with respect to the LIA field preemption issue raised here.

SUMMARY OF ARGUMENT

This Court long ago established the broad field preemptive effect of both the LIA and SAA, and each is a necessary part of the uniform regulatory scheme that Congress intended in order to allow the nation's railroads to operate efficiently and effectively across state lines. Only locomotives and locomotive equipment are at issue here. Thus, only LIA field preemption is raised. However, the Court should consider that its decision in this case will necessarily affect

lower courts' treatment of SAA field preemption going forward. The two statutes are inextricably linked and their respective fields of preemption must work in tandem to effectively ensure that national uniformity is maintained in the regulation of the railroad industry.

Petitioners assert several erroneous arguments as to why LIA field preemption should not apply to their claims in this case. First, Petitioners argue that the LIA only regulates locomotives that are "in use on a railroad line," and thus, the field preemptive scope of the LIA does not extend to locomotives and locomotive parts while they are being repaired or installed off-line. (Pet. Br. 19-28). In other words, Petitioners suggest that states should be allowed to regulate a locomotive's design, construction, parts, and materials when a locomotive is being repaired, while the FRA exclusively regulates that same locomotive's design, construction, parts, and materials when it is "in use." That analysis is erroneous and the cases addressing the issue have rejected the argument. As this Court has held, the federally preempted field is defined not by ***where*** the regulation is applied but by the physical "object" that is regulated. *Napier v. Atlantic Coast Line R.R. Co.*, 272 U.S. 605, 611-13 (1926). The physical object of the state regulation is the locomotive and the design, construction, and material of its parts. Therefore, any state regulation directed at that ***object***, whether or not it happens to be "in use" at the time, is preempted.

Next, Petitioners also argue that the LIA does not preempt claims against railroad equipment manufacturers arising prior to 1988. (Pet. Br. 28-31). This position, however, is inconsistent with the goal of LIA field preemption and has been widely rejected by both state and federal courts. Both Respondents and the government address the fact that Congress's goal of national uniformity under the LIA would clearly be undermined if states were allowed to simply move one step up the supply chain and regulate the manufacturers and distributors of locomotives and locomotive parts that supply products to railroads. (Res. Br. 42-44; U.S. Br. 27-29). Like the "in use" argument discussed above, Petitioners' assertion on this point fails because it is just as irrelevant to consider ***against whom*** the state regulation is enforced as ***where*** the regulation is implemented. Again, the relevant inquiry for purposes of LIA field preemption is whether the state and federal regulations are "directed to the same subject – ***the equipment of locomotives***" and whether "[t]hey operate upon the same ***object***." *Napier*, 272 U.S. at 612 (emphasis added).

Finally, this Court should leave the holding of *Napier* in place. Overruling it at this point in time would, in essence, punish railroads and manufacturers retroactively and afford them no chance to comply with a new and different pronouncement of law. Such a result would be contrary to the doctrine of *stare decisis*. Although Petitioners urged this Court to overrule *Napier* in their petition for certiorari (Pet. 36-40), they tellingly do not renew that argument in

their merits brief. (U.S. Br. 12 n.3). In addition, allowing state court juries, based on varying state-by-state standards, to impose liability on railroads and manufacturers for warnings-based claims would result in the same unfair retroactive restriction on commerce. Moreover, the government's proposed distinction between "warnings" claims and "product defect" claims (U.S. Br. 25-27), is unworkable. Failure to warn claims require courts to examine, as a threshold matter, whether the product could have been designed or constructed without the risk that is the subject of the warning. Even allowing states to regulate only warnings would still disrupt Congress's goal of national uniformity in regulation of the railroad industry. Thus, the Court should affirm the judgment of the court of appeals and leave the holding of *Napier* in place.

ARGUMENT

I. FIELD PREEMPTION UNDER BOTH THE LIA AND THE SAA IS INTEGRAL TO THE FEDERAL GOVERNMENT'S UNIFORM REGULATION OF THE RAILROAD INDUSTRY AND THIS COURT'S DECISION WILL AFFECT THE PREEMPTIVE SCOPE OF BOTH ACTS

The interstate railroad system cannot function properly without uniform, consistent laws and regulations on a national level. The field preemptive effect of both the LIA and the SAA is part and parcel of the

broad regulatory scheme that allows efficient interstate railroad operation. Thus, it is important to consider that this Court's decision will affect the continuing vitality of both LIA ***and*** SAA field preemption.

A. Brief History of LIA and SAA Field Preemption

In 1893, Congress enacted the first of the Safety Appliance Acts, and in 1911 it followed with the LIA. These two statutes were enacted with the same Congressional purposes, and are now both codified in Title 49 of the United States Code (49 U.S.C. §§ 20301-20306 (1994) (SAA); and 49 U.S.C. §§ 20701-20903 (1994) (LIA)). Both are remedial statutes which must be construed liberally to achieve their purpose. *Urie v. Thompson*, 337 U.S. 163, 182, n.20 (1949).

The LIA is concerned exclusively with locomotives, including their "tender, parts, and appurtenances," and states in pertinent part as follows:

> A railroad carrier may use or allow to be used a locomotive or tender on its railroad line only when the locomotive or tender and its parts and appurtenances –
>
> (1) are in proper condition and safe to operate without unnecessary danger of personal injury;
>
> (2) have been inspected as required under this chapter and regulations prescribed by

> the Secretary of Transportation under this chapter; and
>
> (3) can withstand every test prescribed by the Secretary under this chapter.

49 U.S.C. § 20701. The SAA applies to both locomotives and rail cars and sets forth the various safety appliances required to be present on each. The pertinent section of the SAA provides as follows:

> (a) **General.** – Except as provided in subsection (c) of this section and section 20303 of this title, a railroad carrier may use or allow to be used on any of its railroad lines –
>
> (1) a vehicle only if it is equipped with –
>
> (A) couplers coupling automatically by impact, and capable of being uncoupled, without the necessity of individuals going between the ends of the vehicles;
>
> (B) secure sill steps and efficient hand ***brakes***; and
>
> (C) secure ladders and running boards when required by the Secretary of Transportation, and, if ladders are required, secure handholds or grab irons on its roof at the top of each ladder;
>
> (2) except as otherwise ordered by the Secretary, a vehicle only if it is equipped with secure grab irons or handholds on its ends and sides for greater security to individuals in coupling and uncoupling vehicles;

(3) a vehicle only if it complies with the standard height of drawbars required by regulations prescribed by the Secretary;

(4) a locomotive only if it is equipped with a power-driving ***wheel brake*** and appliances for operating ***the train-brake system***; and

(5) a train only if –

(A) enough of the vehicles in the train are equipped with ***power or train brakes*** so that the engineer on the locomotive hauling the train can control the train's speed without the necessity of brake operators using the common ***hand brakes*** for that purpose; and

(B) at least 50 percent of the vehicles in the train are equipped with ***power or train brakes*** and the engineer is using the power or ***train brakes*** on those vehicles and on all other vehicles equipped with them that are associated with those vehicles in the train.

(b) **Refusal to Receive Vehicles Not Properly Equipped.** – A railroad carrier complying with subsection (a)(5)(A) of this section may refuse to receive from a railroad line of a connection railroad carrier or a shipper a vehicle that is not equipped with ***power or train brakes*** that will work and readily interchange with the ***power or train brakes*** in use on the vehicles of the complying railroad carrier.

(c) **Combined Vehicles Loading and Hauling Long Commodities.** – Notwithstanding

subsection (a)(1)(B) of this section, when vehicles are combined to load and haul long commodities, only one of the vehicles must have ***hand brakes*** during the loading and hauling.

(d) **Authority to Change Requirements.** – The Secretary may –

(1) change the number, dimensions, locations, and manner of application prescribed by the Secretary for safety application prescribed by the Secretary for safety applications required by subsection (a)(1)(B) and (C) and (2) of this section only for good cause and after providing an opportunity for a full hearing;

(2) amend regulations for installing, inspecting, maintaining, and repairing ***power and train brakes*** only for the purpose of achieving safety; and

(3) increase, after an opportunity for a full hearing, the minimum percentage of vehicles in a train that are required by subsection (a)(5)(B) of this section to be equipped and used with ***power or train brakes***.

(e) **Services of Association of American Railroads.** – In carrying out subsection (d)(2) and (3) of this section, the Secretary may use the services of the Association of American Railroads.

49 U.S.C. § 20302 (emphasis added).

Title 49, including both the LIA and SAA, contains federal statutes "of a general and permanent nature relating to Transportation. . . ." 49 U.S.C., explanation at p. V.

> The nation's economy and society in general are heavily dependent upon transportation. The need for federal government regulation of such a vital and far reaching industry was recognized by the framers of the United States Constitution in granting Congress the power to regulate commerce. Since that time [Congress] has attempted to provide the citizens of this country with safe, economical, and nondiscriminatory means of transportation.

Id.

Consistent with Congress's power over interstate commerce and transportation, railroads have been "subject to comprehensive federal regulation for nearly a century." *Carrillo v. ACF Industries, Inc.*, 980 P.2d 386, 389 (Cal. 1999) (quoting *United Transp. Union v. Long Island R. Co.,* 455 U.S. 678, 687 (1982)), *cert. denied*, 528 U.S. 1077 (2000). Congress "inten[ds] that railroads should be regulated primarily on a national level through an integrated network of federal law," and has regulated "almost all aspects of the railroad industry, including rates, safety, labor relations, and worker conditions." *R.J. Corman R. Co. v. Palmore,* 999 F.2d 149, 152 (6th Cir. 1993).

In recognition of this comprehensive regulatory scheme and Congressional intent, both the LIA and

SAA have been given a broad field preemptive effect by this Court. The field preemptive scope of the LIA was first established in 1926 when this Court unanimously held that it "extends to the design, the construction, and the material of every part of the locomotive and tender and of all appurtenances." *Napier v. Atlantic Coast Line R.R. Co.*, 272 U.S. 605, 611 (1926). *Napier* further expressly held as follows:

> " . . . **[T]he Boiler Inspection Act, as we construe it, was intended to occupy the field.** The broad scope of the authority conferred upon the Commission[3] leads to that conclusion. Because the standard set by the Commission must prevail, **requirements by the States are precluded, however commendable or however different their purpose**."

Napier, 272 U.S. at 613 (emphasis added). Likewise, this Court first established the field preemptive effect of the SAA nearly a century ago in *Southern Ry. Co. v. R.R. Comm., Indiana*, 236 U.S. 439 (1915), which holds as follows:

> "[T]he exclusive effect of the ***Safety Appliance Act*** did not relate merely to details of

[3] "Commission" refers to the Interstate Commerce Commission which at the time *Napier* was decided had the controlling authority over the railroads. That authority was transferred to the Department of Transportation in 1966 by the Department of Transportation Act. *See Springston v. Consolidated Rail Corp.*, 130 F.3d 241, 244 (6th Cir. 1997), *cert. denied*, 523 U.S. 1094 (1998).

> the statute and the penalties it imposed, but extended to the whole subject of equipping cars with appliances intended for the protection of employees. The States thereafter could not legislate so as to require greater or less or different equipment.
>
> * * *
>
> [I]t is sufficient here to say the Congress has so far ***occupied the field*** of legislation relating to the equipment of freight cars with safety appliances as to supersede existing and prevent further legislation on that subject."

Southern Ry. Co., 236 U.S. at 446-47 (emphasis added); *see also Pennsylvania Ry. Co. v. Pub. Service Comm'n*, 250 U.S. 566, 569 (1919) (via the SAA, the United States has exercised its exclusive power in the field, and thus "the states no more can supplement its requirements than they can annul them"); *Davis v. Manry*, 266 U.S. 401 (1925) (reaffirming SAA field preemption); *Gilvary v. Cuyahoga Valley Ry. Co.*, 292 U.S. 57, 60-61 (1934) ("So far as the safety equipment of such vehicles is concerned, [the Safety Appliance Act] operates to exclude state regulation whether consistent, complementary, additional or otherwise.").

Over the past century, the federal government has specifically regulated the design, maintenance, and safety of locomotives (by way of the LIA) and rail cars (by way of the SAA). Pursuant to authority granted in those statutes and generally in 49 U.S.C. § 20103, the Secretary of Transportation has adopted

a comprehensive array of detailed federal regulations governing the operation and safety of the railroads and the necessary equipment, including locomotives, railcars, and their brakes. Those regulations are set forth in Chapter II of Title 49 of the Code of Federal Regulations. Chapter II is divided into thirty-eight (38) parts, addressing in excruciating detail matters from "Informal Rules of Practice" to "Magnetic Levitation Technology" and all manner of topics in between.

For example, in the context of brakes, Title 49 C.F.R., Part 232, specifically governs "Railroad Power Brakes and Drawbars." These regulations are exhaustive, precise, and detailed. They set forth, for instance, the percentage of railcars that must have brakes (§ 232.1), the minimum brake shoe clearance (§ 232.10(h)(1)), the proper brake shoe alignment (§ 232.10(i)(1)), minimum brake cylinder piston travel (§ 232.12(f)(2)), brake tests (§ 232.13), and brake equipment testing (§ 232.14). The regulations address brake shoes, power brakes, brake valves, equalizing reservoirs, brake piping, operating valves, and brake pressures (App. B to Part 232).

Further, the continuing vitality of field preemption under both the LIA and the SAA is clearly recognized by these regulations. Title 49 C.F.R. § 232.13(b) makes clear that ***in addition to and as a matter separate from*** express preemption under the Federal Railroad Safety Act ("FRSA"), 49 U.S.C. § 20106 (1994):

> Preemption should **also** be considered pursuant to the **Locomotive Boiler Inspection Act** (now codified at 49 U.S.C. 20701-20703), the **Safety Appliance Acts** (now codified at 49 U.S.C. 20301-20304), and the Commerce Clause **based on the relevant case law pertaining to preemption under those provisions**.

(Emphasis added). This regulation thus expressly clarifies that broad field preemption under the LIA and SAA, and as originally set forth by this Court in *Napier* and *Southern Ry. Co.*, is still in existence and necessary to the uniform of regulation of the railroad industry.

Field preemption under the LIA and SAA is more than a mere legal side effect of Congress's exhaustive regulatory scheme; it is an integral component of such regulation. The Ninth Circuit Court of Appeals discussed LIA preemption's role in this respect as follows:

> This broad preemptive sweep is necessary to maintain uniformity of railroad operating standards across state lines. Locomotives are designed to travel long distances, with most railroad routes wending through interstate commerce. The virtue of uniform national regulation "is self-evident: locomotive companies need only concern themselves with one set of equipment regulations and need not be prepared to remove or add equipment as they travel from state to state." *Southern Pac. Transp. Co. v. Oregon PUC,* 9 F.3d 807,

> 811 (9th Cir.1993); *see also R.J. Corman R.R. v. Palmore,* 999 F.2d 149, 152 (6th Cir.1993) ("Th[e] lasting history of pervasive and uniquely-tailored congressional action indicates Congress's general intent that railroads should be regulated primarily on a national level through an integrated network of federal law."). Any state law that undermines this regime is preempted by the LIA.

Law v. General Motors Corp., 114 F.3d 908, 910 (9th Cir. 1997). Likewise, the California Supreme Court has recognized the importance of uniform regulation in the context of the SAA: "Given the goal of national uniformity, allowing (state remedies for design defect) claims would substantially impair its function." *Carrillo*, 980 P.2d at 393. The *Carrillo* court went on to expound on this issue:

> This observation suggests an additional concern considering the national dimension of rail transportation. Should safety requirements imposed by individual states conflict, they could create an unconstitutional burden on interstate commerce. (See, e.g., *Bibb v. Navajo Freight Lines* (1959) 359 U.S. 520, 79 S.Ct. 962, 3 L.Ed.2d 1003; *Southern Pacific Co. v. Arizona* ex rel. *Sullivan* (1945) 325 U.S. 761, 65 S.Ct. 1515, 89 L.Ed. 1915.) "A State which insists on a design out of line with the requirements of almost all the other States may sometimes place a great burden of delay and inconvenience on those interstate [transporters] entering or crossing its territory." (*Bibb v. Navajo Freight Lines,*

> *supra,* 359 U.S. at pp. 529-530, 79 S.Ct. 962.) Absent uniform federal standards for safety appliances, such potential is inherent in the "free runner" system by which freight cars are readily interchanged throughout the country.

Id.

Field preemption under the LIA and SAA has far reaching implications related to the railroad industry and thus, interstate commerce. Both of these statutes are vital parts of the comprehensive scheme of federal regulation over railroad safety and equipment and preempt all state law in their respective fields, just as they have since this Court definitively determined their preemptive scope in *Napier* and *Southern Ry. Co*. Thus, when deciding the issue of the continued vitality of LIA field preemption, it is important also to consider the effect such a decision will have on field preemption under the SAA.

B. The LIA and SAA are Inextricably Linked and Deciding the Field Preemptive Scope of One without Considering the Other is Impractical, if not Impossible

The SAA is considered a "sister statute" of the LIA, *Seaman v. A.P. Green Industries*, 707 N.Y.S.2d 299, 302 (N.Y. Sup. Ct. 2000), and is afforded the same type of broad field preemptive effect in the field of train safety appliances (such as railcar brake shoes) as the LIA is given in the field of locomotive design and equipment. The reasoning behind LIA

field preemption as stated in the court of appeals' opinion (*i.e.*, "Congress's goal of uniform railroad equipment regulation," *see* Pet. App. 14a,) is just as applicable to safety equipment on railcars under the SAA. Any other result would effectively eviscerate Congress's goal of national uniformity by undermining its very purpose. For example, it would make no practical sense that the design and make-up of brake shoes on locomotives would be reserved exclusively for federal regulation, but that individual states would be free to regulate those exact same parts if they happened to be attached to the railcars being propelled by the locomotives.

As discussed above, this Court has recognized the field preemptive effect of the SAA since 1915, when it decided *Southern Ry. Co*. This Court again recognized the SAA's field preemptive effect in *Pennsylvania Ry. Co. v. Pub. Service Comm'n*, 250 U.S. 566 (1919), where it stated:

> But when the United States has exercised its exclusive powers over interstate commerce so far as to take possession of the field, the States no more can supplement its requirements than they can annul them.
>
> * * *
>
> The subject matter in this instance is peculiarly one that calls for uniform law and in our opinion regulation by the paramount authority has gone so far that the statute of Pennsylvania cannot impose the additional obligation in issue here.

Id. at 569. Again in 1934, this Court reiterated that "[s]o far as the safety equipment of such (railroad) vehicles is concerned, these acts (the SAA) operate to exclude state regulation whether consistent, complimentary, additional, or otherwise." *Gilvary v. Cuyahoga Valley Ry. Co.*, 292 U.S. 57 (1934).

The Supreme Court of California recognized this Court's establishment of SAA field preemption. *Carrillo v. ACF Industries, Inc.*, 980 P.2d 386, (Cal. 1999), *cert. denied*, 528 U.S. 1077 (2000). Holding that the plaintiff's state law products liability and failure to warn claims were preempted by the SAA, *Carrillo* states as follows:

> ***As interpreted by the United States Supreme Court***, the statutes [the SAA] and their implementing regulations reflect a congressional intent to occupy the field regulating railroad safety appliances, thus precluding any state law directed to the same matter, including common law tort claims predicated on design defects.

Id. at 387 (explanation and emphasis added). It is thus clear that based upon *Southern Ry. Co.* and its progeny, including *Carrillo*, that field preemption under the SAA is just as viable and important to achieving Congress's goal of national uniformity of regulation in the railroad industry as preemption under its "sister statute," the LIA.

Both Petitioner and the government recognize that the LIA and SAA are one and the same in their respective fields. Petitioner points out that "[i]n light

of their similarities," courts have treated the LIA and SAA in like fashion with regard to the "in use" limitation (the merits of which are discussed in detail below). (Pet. Br. 25 n.22). Likewise, the government, again discussing the "in use" theory, compares this Court's interpretation of the LIA and the SAA and states that the SAA "***similarly*** regulates the 'use' of vehicles on 'railroad lines.'" (U.S. Br. 15 (emphasis added)).

Here, while Petitioner's claims fall only within the purview of the field preemptive scope of the LIA, the implications of this Court's decision will necessarily affect field preemption analysis under the SAA as well. Thus, the judgment of the court of appeals should be affirmed, and it should be made clear that the same reasoning applies to cases in which SAA field preemption is at issue.

II. THE ARGUMENTS ADVANCED BY PETITIONERS ARE UNWORKABLE AND, IF ACCEPTED, WOULD BE EQUIVALENT TO A RETROACTIVE PENALTY AGAINST RAILROADS AND EQUIPMENT MANUFACTURERS

A. The "In Use" Argument Lacks Merit

Petitioners claim that the LIA only regulates locomotives that are "in use on a railroad line," and thus, the field preemptive scope of the LIA does not extend to locomotives and locomotive parts while they are being repaired or installed off-line. (Pet. Br. 19-28). In other words, Petitioners posit that states

should be able to regulate a locomotive's design, construction, parts, and materials when a locomotive is being repaired, while the FRA exclusively regulates that same locomotive's design, construction, parts, and materials when it is "in use." That analysis is erroneous and the cases addressing the issue have rejected the argument. The federally preempted field is defined not by ***where*** the regulation is applied but by the physical "object" that is regulated. *Napier*, 272 U.S. at 611-13. The physical object of the state regulation is the locomotive and the design, construction, and material of its parts. Therefore, any state regulation directed at that ***object*** is preempted. *Id.*

Petitioners' tortured reading of *Napier* does not change this fact. Petitioners claim that "*Napier* reflects the 'in use' limitation on the LIA's regulatory scope." (Pet. Br. 37). This "reflection," however, is simply a product of Petitioners selectively italicizing only certain language from the opinion and deemphasizing other language. According to Petitioner, the important language in *Napier* is "used on," "for service," and "for operation." (*Id.*) On the contrary, the Court's point in *Napier* was that the field preempted is defined by the ***object*** regulated, not the location of that object. *Napier*, 272 U.S. at 612 ("The federal and the state statutes are directed to the same subject – ***the equipment of locomotives***. They operate upon the same ***object***." (Emphasis added)). Thus, the operative words in the passages from *Napier* that Petitioner quotes are actually "locomotive," and "equipment." State regulation of these objects is thus

preempted, regardless of whether they are "in use" when the regulation is implemented.

Moreover, the idea that a locomotive must be "in use" for LIA field preemption to apply is unworkable. In fact, it is impossible. A locomotive's design, parts, construction, and materials do not change when the locomotive goes from being "in use" to being repaired. Thus, it is no wonder that the argument has been soundly rejected by every court deciding the issue. *See*, *e.g.*, *Seaman*, 707 N.Y.S.2d at 302 (explaining that it is "irrelevant whether the plaintiff was exposed to asbestos from locomotives in use or off-line, because a locomotive's design, construction, parts and materials, which are regulated by the LIA, are the same whether or not the locomotive is in use"); *Darby v. A-Best Prods. Co.*, 2002 WL 31839197 (Ohio App. Jan. 15, 2003), *aff'd*, 811 N.E.2d 1117 (Ohio 2004), *cert. denied*, 543 U.S. 1146 (2005); *Frastaci v. Vapor Corp.*, 158 Cal. App. 4th 1389 (2007); and *Ransford v. Griffin Wheel Co., Inc.*, 2009 WL 1994740 (Cal. App.), *cert. denied*, 130 S.Ct. 1691, 176 L.Ed.2d 181 (March 1, 2010).

Petitioner makes a textual argument in support of the "in use" theory, stating that "[t]he text and structure of that provision make plain that it applies only to the 'use' of a locomotive 'on [a] railroad line.'" (Pet. Br. 21). This argument is misplaced. Field preemption results not simply from the statute's text but from the dominance of the federal interest and the statute's purpose, structure, and pervasiveness. *See Pennsylvania v. Nelson*, 350 U.S. 497, 502-04 (1956).

Thus, the LIA's occupation of the field – and necessarily the scope of that field – is discerned from the "broad scope of the authority conferred upon the [FRA]" over "the design, the construction and the material of every part of the locomotive," and the requirement of national uniformity. *Napier*, 272 U.S. at 611, 613; *Law v. General Motors Corp.*, 114 F.3d 908, 910-12 (9th Cir. 1997); *Oglesby v. Delaware & Hudson Railway Co.*, 180 F.3d 458, 462 (2nd Cir. 1999), *cert. denied*, 528 U.S. 1004 (1999). State-by-state regulation concerning the design, construction and material of locomotives infringes on that authority and disrupts the uniformity of the federal regulatory regime, and as such, it is preempted whether or not the locomotive is "in use."

Even under a purely textual analysis, however, Petitioners' argument fails when the full text of the LIA is examined. Both the LIA and the SAA contain the following language: "a railroad carrier may use ***or allow to be used*** . . . on its railroad line. . . ." 49 U.S.C. §§ 20701, 20302 (emphasis added), *supra* at 6-7. Petitioner relies exclusively upon the "use . . . on its railroad line" language while paying no heed to the "allow to be used" language. (Pet. Br. 21). Thus, by the rationale employed by Petitioner, a complete reading of the text of the statutes actually shows that the safety requirements in the LIA and SAA apply not only to the ***use*** of a locomotive, but also to the ***allowing*** (*i.e.*, inspection, repair, replacement) of locomotives to be used.

The LIA is, after all, the "Locomotive Boiler ***Inspection*** Act." The Act itself commands that a locomotive must be inspected, tested and repaired in order to be used at all on line. 49 U.S.C. § 20701(2). The LIA specifically requires the FRA to "inspect every locomotive and tender and its parts and appurtenances." 49 U.S.C. § 20702(a)(2). As Petitioner acknowledges (Pet. Br. 22-23), the FRA is required to "ensure that every railroad carrier . . . repairs every defect that is disclosed by an inspection ***before*** a defective locomotive, tender, part, or appurtenance is used again." 49 U.S.C. § 20702(a)(3) (emphasis added). The FRA is also required to regulate the carriers' own inspections. 49 U.S.C. § 20702(c)(1). Pursuant to that authority, the FRA mandates that numerous parts be "removed," "cleaned," "repaired," "replaced," "inspected," and "maintained" by railroads.[4] All of this

[4] Regulations under LIA require daily inspections (49 C.F.R. § 229.21); thorough inspection and testing of gauges, electrical devices, insulation, steam generators, and other components every three months (49 C.F.R. § 229.23-25 and Form FRA F180-49A); and further tests annually and biennially. (49 C.F.R. § 229.27-31). Under these regulations, for example, brake components must be "cleaned, repaired or replaced," a steam-generator component must be "removed and inspected," the main reservoir must be "hammer tested over its entire surface," "all internal and external surfaces" inspected at specified intervals and a periodic inspection must be performed annually. 49 C.F.R. §§ 229.27, 229.31; *Lilly v. Grand Trunk R.R.*, 317 U.S. 481, 486-87 (1943) (approving rules under LIA requiring water tanks to "be maintained free from leaks," "inspected" and "cleaned, if necessary" at least once a month and cab aprons to be "maintained in a safe and suitable condition").

occurs while the locomotives are off-line. It makes no sense that the locomotive parts and appurtenances suddenly cease to be within the field preempted by the LIA while undergoing inspection and repairs ***that are required by the LIA itself***.

Petitioner also relies upon several FELA cases to support the "in use" distinction. (Pet. Br. 23-27). As Petitioner admits, those cases involved injured employees attempting to hold an employer liable for a violation of the LIA or SAA. (Pet. Br. 26-27). The employees in those cases brought claims under the Federal Employers' Liability Act ("FELA"), 45 U.S.C. §§ 51, *et seq*. (a federal, not state-law duty) based on a supposed breach of the railroad's duty to maintain the locomotive even though the locomotive was off-line. None of the cases involve products liability or preemption at all. *See*, *e.g.*, *Brady v. Terminal R.R.*, 303 U.S. 10, 13 (1938); *Baltimore & Ohio R.R. Co. v. Hooven*, 297 F. 919, 921, 923 (6th Cir. 1924); *New York, C. & St. L.R.R. Co. v. Kelly*, 70 F.2d 548, 551 (7th Cir. 1934); *Wright v. Arkansas & Mo. R.R.*, 574 F.3d 612, 620 (8th Cir. 2009); *McGrath v. Consolidated Rail Corp.*, 136 F.3d 838, 842 (1st Cir. 1998); *Crockett v. Long Island R.R.*, 65 F.3d 274, 277 (2d Cir. 1995); *Estes v. Southern Pac. Transp. Co.*, 598 F.2d 1195, 1198-99 (10th Cir. 1979); *Tisneros v. Chicago & N.W. Ry.*, 197 F.2d 466, 467-68 (7th Cir.), *cert. denied*, 344 U.S. 885 (1952); *Deans v. CSX Transp., Inc.*, 152 F.3d 326, 328-29 (4th Cir. 1998); *Trinidad v. Southern Pac. Transp. Co.*, 949 F.2d 187, 188 (5th Cir. 1991); *Angell v. Chesapeake & Ohio Ry.*, 618 F.2d 260, 262

(4th Cir. 1980); *Pinkham v. Maine Cent. R.R. Co.*, 874 F.2d 875, 881 (1st Cir. 1989); and *Steer v. Burlington N., Inc.*, 720 F.2d 975, 976-77 (8th Cir. 1973). (Pet. Br. 23-27). These cases simply reflect that the in use/off-line distinction is only relevant for the simple common sense reason that a side-lined locomotive need not be fit to operate. That has to be the law; if a locomotive had to be fit to operate when not in use, it could never be serviced. *See Lyle v. Atchison, T. & S.F. Ry. Co.*, 177 F.2d 221, 223 (7th Cir. 1949) (it is "opposed to reality" to require locomotive be already repaired and maintained when it goes off-line to be repaired and maintained); *Phillips v. CSX Transp., Inc.*, 190 F.3d 285, 288 (4th Cir. 1999) ("the purpose of the 'in use' limitation is to give railcar operators the opportunity to inspect for and correct safety appliance defects before the [SAA] exposes the operators to strict liability for such defects"); *Id.* at 288, n.2 ("because the 'in use' language in the [LIA] is identical to the language in the [SAA], courts have applied caselaw interpreting the [LIA] to the [SAA], as well"). The railroad's absolute duty to maintain its equipment has nothing whatsoever to do with preemption or common law design claims. Indeed, the LIA preempts state law where the absolute duty to maintain does not apply at all. *Marshall v. Burlington Northern, Inc.*, 720 F.2d 1149, 1152 (9th Cir. 1983) (Kennedy, J.) (holding that railroad owes no duty to maintain experimental devices, but state regulation of them is preempted). Thus, there is no such thing as an "off-line" design for the state to regulate. The locomotive design, construction and parts necessarily remain

within the scope of the FRA's authority whether they are "in use" or not.

Petitioner is simply wrong on this point. It is not possible to allow states to regulate the makeup of an off-line locomotive while preventing them from regulating the makeup of that same locomotive when it happens to be "in use," and no case endorses such a proposition. *Napier* clearly determined that the LIA preempts the field of the design, construction and materials of every part of the locomotive. 272 U.S. at 611-13. Any claim that attacks the design, construction and materials of locomotive parts, such as the claim at issue in this case, falls squarely within the preempted field. As such, Petitioner's argument on this point should be rejected, and the judgment of the court of appeals should be affirmed.

B. LIA Field Preemption Applies to Claims Against Manufacturers

Petitioners also argue that the LIA does not preempt claims against railroad equipment manufacturers arising prior to 1988. (Pet. Br. 28-31). This position is without merit, and it is incongruous with the goal of LIA field preemption.

As both Respondents and the government aptly discuss, Congress's goal of national uniformity under the LIA would clearly be undermined if states were allowed to simply move one step up the supply chain and regulate the manufacturers and distributors of locomotives and locomotive parts that supply

products to railroads. (Res. Br. 42-44; U.S. Br. 27-29). It makes perfect sense that claims against manufacturers and distributors should fall within the preempted field when you consider the fact that "preemption analysis 'focuses not on whom the legal duty is imposed, but on whether the legal duty constitutes a state law requirement' already covered by federal law." *Law v. General Motors Corp.*, 114 F.3d 908, 912 (9th Cir. 1997), quoting *Taylor AG Indus. v. Pure-Gro*, 54 F.3d 555, 561 n.3 (9th Cir. 1995). Much like the "in use" argument discussed above, Petitioners' assertion on this point fails because it is just as irrelevant to consider ***against whom*** the state regulation is enforced as ***where*** the regulation is implemented. This Court has clearly held that the relevant inquiry for purposes of LIA field preemption is whether the state and federal regulations are "directed to the same subject – ***the equipment of locomotives***" and whether "[t]hey operate upon the same ***object***." *Napier*, 272 U.S. at 612 (emphasis added). It is thus no surprise that this argument has been widely rejected by both state and federal courts. *See*, *e.g.*, *Law*, 114 F.3d at 910-912; *Forrester v. American Dieselectric, Inc.*, 255 F.3d 1205, 1210 (9th Cir. 1999); *Oglesby v. Delaware & Hudson Railway Co.*, 180 F.3d 458, 462 (2d Cir. 1998), *cert. denied*, 120 S.Ct. 498 (1999); *Springston v. Consolidated Rail Corp.*, 130 F.3d 241, 244 (6th Cir. 1997), *cert. denied*, 523 U.S. 1094 (1998); *Scheiding v. General Motors Corp.*, 993 P.2d 996, 1003-04 (Cal. 2000), *cert. denied*, 531 U.S. 958 (2000); *Darby v. A-Best Products Company*, 811 N.E.2d 1117, 1125 (Ohio 2004), *cert. denied*,

543 U.S. 1146 (2005); *In Re: West Virginia Asbestos Litigation*, 592 S.E.2d 818, 823-24 (W. Va. 2003), *cert. denied sub nom.*, *Abbott v. A-Best Products Company*, 549 U.S. 823 (2006); *General Motors v. Kilgore*, 853 So.2d 171, 175-76 (Ala. 2002); *Wright v. General Electric Co.*, 242 S.W.3d 674, 680-82 (Ky. Ct. App. 2007); *Seaman v. A.P. Green Industries, Inc.*, 707 N.Y.S.2d 299, 300-03 (N.Y. Sup. Ct., 2000); *Bell v. Illinois Central R.R. Co.*, 236 F. Supp. 2d 882, 890-91 (N.D. Ill. 2001); and *D'Amico v. Garlock Sealing Technologies, LLC*, 2007 WL 2702774, *6-7 (E.D. Pa.).

The lone case cited by Petitioners that holds otherwise, *Lorincie v. Southeastern Pennsylvania Trans. Auth.*, 34 F. Supp. 2d 929 (E.D. Pa. 1998), was wrongly decided. As Petitioners do here, that case misconstrued the intent and goals of the LIA by incorrectly focusing on to whom the Act applies, rather than the purposes for which it was enacted. Also, *Lorincie* relied heavily on *Viad Corp. v. Superior Court*, 55 Cal. App. 4th 330, 64 Cal.Rptr.2d 136 (1997), and *Oglesby v. Delaware Hudson Ry. Co.*, 964 F. Supp. 57 (N.D. N.Y. 1997), neither of which is good law. *Viad* was overturned in 2000 by the California Supreme Court in *Scheiding*, 993 P.2d at 1004 n.6, and the district court *Oglesby* decision cited in *Lorincie* was later reversed by the Second Circuit in *Oglesby*, 180 F.3d 458. Thus, *Lorincie* provides no credible support for Petitioners' argument, and it is certainly no basis for reversing the judgment of the court of appeals.

C. The Retroactive Effect of Overturning *Napier* would be Contrary to the Doctrine of *Stare Decisis*

While Petitioners urged this Court to overrule *Napier* in their petition for certiorari (Pet. 36-40), they do not renew that argument in their merits brief. (U.S. Br. 12 n.3). Rightfully so, as such a result is unsupported by law and would run contrary to the doctrine of *stare decisis*. This is especially true when it comes to LIA field preemption. As Respondents point out, *Napier*'s construction of the LIA's preemptive scope is entitled to "especially strong 'statutory *stare decisis*' force," because Congress at any point could have amended the LIA to change its preemptive effect and chose not to do so. (Res. Br. 29, citing *John R. Sand & Gravel Co. v. United States*, 552 U.S. 130, 139 (2008); and *CBOCS West, Inc. v. Humphries*, 553 U.S. 442, 457 (2008)).

Napier's continued vitality is evidenced by an "avalanche" of authority holding that the LIA must continue to be given a broad field preemptive effect. *Frastaci v. Vapor Corp.*, 158 Cal. App. 4th 1389, 1403 (2007) (stating that its finding of preemption was "consistent with an avalanche of state and federal court decisions holding firm to the *Napier* principle that the LIA preempts state tort actions"); *In Re: West Virginia Asbestos Litigation*, 592 S.E.2d at 822 ("an overwhelming body of case law" persuaded the court that Congress, through the LIA had occupied the field such that the plaintiff's asbestos claims were preempted and that any other decision was "blocked

by an avalanche of adverse authority"). Indeed, the field preemptive effect of the LIA, as set forth in *Napier*, has been upheld in virtually every jurisdiction to have decided the issue, with Pennsylvania being the lone exception. (Pet. *Harris* Br. 22-37).

Reversing the Third Circuit's decision would not only endanger the uniformity necessary to ensure railroad usage across state boundaries and create uncertainty in the railroad industry, it would apply a retroactive punishment against railroads and manufacturers. The certainty created by LIA field preemption under *Napier* has allowed locomotive and locomotive part manufacturers to design and build their products subject to one set of nationally uniform regulations, and that certainty and reliance should be left in place. Even with respect to asbestos, the railroads and manufacturers have relied on pronouncements from studies commissioned by the federal government and conformed their behavior accordingly. *See*, *e.g.*, U.S. Dep't of Transp., Report to Congress, Locomotive Crashworthiness and Cab Working Conditions (Sept. 1996), at 10-12;[5] Robert N. Thompson, *Air Quality in Baltimore and Ohio Trains Descending the Altamont-Piedmont Grade in West Virginia* (December 1972) (App. 1-9); J.F. Quealy & J.M. Wandrisco, *Report on Research Work FRA Purchase Order 810-4361*, *Asbestos Emissions from*

[5] *Available at* http://www.regulations.gov/#!documentDetail;D=FRA-2004-17645-0009.

Railroad Brake Shoes (July 1978) (App. 10-24); and U.S. Government Memorandum Regarding Brake Shoe Emission Test Reports (April 19, 1978) (App. 25-28). Overruling *Napier* would, in essence, punish railroads and manufacturers retroactively and afford them no chance to comply with a new and different pronouncement of law.

Allowing state court juries, based on varying state-by-state standards, to impose liability on railroads and manufacturers for warnings-based claims would result in the same unfair retroactive restriction on commerce. The government, however, posits a distinction between "defective product" claims and "failure to warn" claims, asserting the former are preempted while the latter are not. (U.S. Br. 25-26). No such distinction exists, and the government's position provides no basis for overturning *Napier* or otherwise circumventing its holding. This Court has recognized that "blackletter products liability law" makes a failure to warn, such as a defective label, itself a type of product defect. *Bruesewitz v. Wyeth LLC*, ___ U.S. ___, 131 S.Ct. 1068, 1087, 179 L.Ed.2d 1 (2011); *see generally* Restatement (Third) of Torts: Products Liability § 2 (1997) ("A product is defective when, at the time of sale and distribution, it contains a manufacturing defect, is defective in design, or is defective because of inadequate instructions or warnings."); Dan B. Dobbs, *The Law of Torts* § 363, p. 1004 (2000) ("a product is defective not only when it suffers from a manufacturing flaw or design but also when its manufacturer or distributor fails to provide a

reasonable warning for reasonably foreseeable harm"); and American Law of Products Liability 3d § 32:2 (2004) (the failure to give a warning when required "is itself a defect"). The government's position thus does not comport with basic tenets of products liability law.

In addition, a warnings claim necessarily presents threshold questions as to the safety of a product's design, including whether the design must be changed. Before the law will sanction curing a product defect by use of a warning, a manufacturer is first required to design the defect out of the product. *See* Restatement (Third) of Torts: Products Liability § 2 cmt. 1 (1997) ("In general, when a safer design can reasonably be implemented and risks can be designed out of a product, adoption of the safer design is required over a warning that leaves a significant residuum of such risks." In other words, "[w]arnings are not . . . a substitute for the provision of a reasonably safe design."); Dobbs, *supra*, at 1005 ("even the very best warning does not remedy the design defect" that could be reasonably designed out of the product). The government's suggestion that warnings claims are "unlikely to be preempted because they would not require manufacturers of locomotives or railroads to alter the design or construction of their locomotives – and, therefore, would not conflict with the LIA," is thus erroneous. (U.S. Br. 26). When those legal realities are considered, it is apparent that state regulation of warnings would disrupt the Congressional goal of national uniformity just as much as any other

type of state regulation, and such claims are thus preempted.

The proposed distinction between "warnings" claims and "defective product" claims is also unworkable on a practical level. The government admits that "different States might impose different warning requirements," but suggests that "variance among required warning labels would not have the effect of imposing non-uniform standards about whether locomotives are safe to operate" because "manufacturers or railroads may either affix the most stringent form of a warning required by any particular State or affix a label that incorporates requirements imposed by several States." (U.S. Br. 27). However, if states are allowed to "impose different warning requirements," it stands to reason that states could also ***change*** those requirements at any time. Thus, a railroad or manufacturer who is abiding by the most stringent state's standards today could be in violation of that state's (or another's) ***more*** stringent standards tomorrow. This theory of state-by-state warnings regulation also contradicts the government's assertion that "[m]anufacturers and railroads may post warnings in repair shops themselves (which obviously do not move from State to State) or on the packaging for the materials in question." (U.S. Br. 27). For example, if a manufacturer places warnings on packaging because the most stringent state law requires it, what is to keep a jury in another state from finding that the warnings should have instead been placed on the repair shop walls? If a railroad places warnings

on both packaging and repair shop walls to "incorporate requirements imposed by several States," as the government suggests, what is to keep another jury in the same or another state from finding that a warning also needed to be placed on the product itself? Avoiding such inevitably ever-changing and conflicting standards is the whole purpose of having a nationally uniform regulatory scheme, and such a system cannot exist where states are allowed to regulate within the preempted field. Warnings claims fall squarely within that field. Therefore, the Court should uphold the national uniformity of regulation created by LIA field preemption under *Napier* and affirm the court of appeals' judgment.

CONCLUSION

The LIA and SAA are sister statutes enacted with the same Congressional intent as part of the dominant federal regulation of the railroad industry. Both have been given a broad field preemptive effect by this Court for nearly a century. This Court's resolution of the LIA field preemption issue presented in this case necessarily directly affects the issue of field preemption under the SAA, as presented in *Harris*. Based on the arguments and authorities above, as well as those in Respondents' brief and briefs of *amici* in support of Respondents, GWC respectfully urges

the Court to affirm the judgment of the court of appeals.

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AIR QUALITY IN BALTIMORE AND OHIO TRAINS DESCENDING THE ALTAMONT – PIEDMONT GRADE IN WEST VIRGINIA

An investigation for the Federal Railroad Administration conducted by the FAA Aeronautical Center Industrial Hygiene Section, Oklahoma City, Oklahoma

DECEMBER 1972

SUBMITTED BY /s/ Robert N. Thompson
ROBERT N. THOMPSON, Ph.D.
Chief, Industrial Hygiene Section

INTRODUCTION

On 28-29 November 1972, acting upon a request from the Federal Railroad Administration's Office of Safety, air quality tests were made by the FAA, Aeronautical Center, Industrial Hygiene Section, in Baltimore and Ohio (B&O) Railroad caboose cars near Cumberland, Maryland. This investigation was conducted in response to a complaint filed with the State of Maryland, Department of Mental Health and Hygiene alleging that smoke produced during prolonged braking of railroad cars may be hazardous to the health of employees riding in caboose cars. The air in the cars was sampled in an attempt to identify and quantify the particulate and vapor fractions of the subjectively detectable material and to assess the effect that such products might have on the occupants.

PROCEDURE

The site selected for the tests is on the B&O line between Altamont, W. Virginia and Piedmont, a seventeen mile section of track descending on an approximate 2.0% grade. Trains negotiating this grade apply brakes for virtually the entire distance and apparently in the process create considerable smoke which is readily visible outside the trains. There was speculation by some that the smoke may have been caused wholly or in part by burning flange lubricant on the tracks.

Tests were performed on four trains; a manifest train, two coal drags, and a grain train in that order. The first two trains were boarded at Altamont and the last two at Mountain Lake Park, Md. Air sampling inside the caboose cars began at Altamont and ended at Piedmont on each run.

SAMPLING

In conversations with brake shoe manufacturer's representatives, we learned something of the probable contents of the composition shoes. Though general due to its proprietary nature, the information did provide some clues to the pyrolysis products we might expect to find in our sampling activities.

One obvious requirement in this type of investigation is that all of the sampling equipment must be portable and battery or hand powered. Consequently, we resorted to the use of (1) direct reading gas

detector tubes and (2) personal samplers for vapor and particulate collection.

(1) Direct reading gas detector tubes were used to measure sulfur dioxide (SO_2), carbon monoxide (CO) ammonia (NH_3) and styrene ($C_6H_5CH:CH_2$) any or all of which could have been present in the caboose air. In this sampling method, a metered quantity of air is aspirated through a glass tube containing a chemical selected to react with a specific gas or vapor. The reaction produces a color change in the tube contents, the length of which is proportional to the concentration of the gas in the sample of air.

(2) Personal samplers are small battery operated pumps which attach to the wearers clothing and aspirate air from his breathing zone at a constant flow rate throughout the sampling period.

One sampler was used to draw air through a tared membrane filter having a pore size of 0.45 micron (μ). The particulates trapped on the filter surface were returned to the FAA, Aeronautical Center, Industrial Hygiene Laboratory where they were weighed and then examined with a light microscope for identification and sizing.

Another sampler was used for vapor collection by drawing air through a 127mm x 6mm glass tube containing activated charcoal. These tubes were

sealed after sampling and returned to the laboratory where they were desorbed with carbon disulfide and analyzed on a gas-liquid chromatograph using a flame ionization detector.

RESULTS

On the first run, a manifest train, we detected no contamination in the caboose either subjectively or by test.

On the second run, the smoke became very dense and visibility in the caboose was severely restricted. Although it was certainly an annoying condition, we did not find it irritating or restrictive to our breathing throughout the fifty minute sampling period.

We would classify smoke concentrations on the third and fourth runs as medium and light respectively when compared with the conditions encountered in the second run.

On the basis of our observations and tests, we conclude that the smoke arises from the "burning" of the brake shoes and that little, if any, comes from burning flange lubricant.

The gas, vapor and particulate sampling results are recorded on page 8.

GASES AND VAPORS

The only contaminant present in measurable amounts using the direct reading gas detector tubes was carbon monoxide. It was detected during each run, but only in trace (T) quantities, less than 10 parts per million parts of air sampled (ppm). The other gases i.e. SO_2, NH_3 and styrene, if present, were in concentrations too low to measure by this method.

The activated charcoal – gas chromatography method used for collection and analysis of vapor contaminants is extremely sensitive to low concentrations. Only during the second run did we collect any measureable, though minute, quantity of material. A chromatographic "finger-print" of this sample bore a strong resemblance to a similar chromatogram of pyrolyzed brake shoe material. Although the components of the sample represent physiologically insignificant air-borne concentrations of contaminants that could be emitted from the brake shoes, we are continuing with tests to identify and quantify each.

PARTICULATES

Particulate concentrations ranged from 0 milligrams per cubic meter (mg/M^3) of air sampled on the first run to 19.75 mg/M^3 on the second run. Microscopic examination of the filters revealed that virtually all of the collected material was black smoke particles (soot) ranging in size from <1 micron (1/25,000 inch) to 6 micron. We saw no asbestos fibers on any of the filters.

CONCLUSIONS

Air quality standards of the Occupational Safety and Health Administration (OSHA) established by the Federal Occupational Safety and Health Act of 1970 contain air-borne concentrations of substances to which it is believed that nearly all workers may be repeatedly exposed day after day (8 hr), week after week (5 days) without adverse effect. They are time-weighted concentrations which means that excursions above the limit may be permitted provided they are compensated by equivalent excursions below the limit during the work day. These threshold limit values (TLV's) are based on the best available information from industrial experience, from experimental human and experimental animal studies, or possibly combinations of the three.

Threshold limit values for all air-borne substances sampled directly on the trains are included in the table on page 8. Only the TLV for nuisance particulates of 10mg/M^3 was exceeded during the 50 minutes of sampling on run number two when the concentration reached 19.75 mg/M^3. However, a time-weighted average for an 8 hour period which included only one such exposure, or even two, would fall far below the TLV. The 50 minute excursion above the TLV would be easily compensated by the much longer exposure to air not contaminated with the smoke. This sample which was collected in the caboose of a long coal drag probably represents the worst condition of this particular smoke problem that would be encountered on this line.

Asbestos, which is an important ingredient in brake shoes, was not detected in its hazardous (fibrous) form in any of the air samples. When subjected to temperatures of 900°F, fibrous asbestos is reduced to a relatively inocuous [sic] powder.

Carbon monoxide, traces of which were detected on each run, is probably traceable to the heaters used in the cars.

We have checked TLV's for other substances which may be degradation products of pyrolyzed composition brake shoes such as phenols and formaldehyde and find that the concentrations of our chromatographically separated charcoal tube sample components are far below such limits.

In summary, air sampling in caboose cars of four B&O trains descending the grade from Altamont, W. Virginia to Piedmont, W. Virginia revealed only traces of CO and no measurable amount of SO_2, NH_3 and styrene. During one run the TLV for nuisance particulates was exceeded briefly but not significantly when the period of exposure was considered. Other collected vapor components of the brake shoe smoke were present in only trace quantities and not physiologically significant.

The infrequent and brief exposures to the smoke in the caboose cars obviates the development of a health hazard to the train crews.

The smoke is visible and annoying but not a cause for concern. We recommend that measures be

initiated to eliminate or control this nuisance and offer the following alternatives:

1. De-activate the brakes on the caboose cars and possibly on one or two cars forward of them if safety procedures will permit. It is our belief that much of the smoke in the caboose comes from its own brakes.

2. Experiment with various window and door ventilation combinations in order to sweep smoke from the cars.

3. Equip the caboose cars with cartridge type respirators for the comfort of crews as they descend the grade.

App. 9

SAMPLING DATA

DATE	TRAIN TYPE	CO ppm		SO_2 ppm		NH_3 ppm		STYRENE ppm		PARTICULATES mg/M^3		SMOKE APPEARANCE
		Test	TLV	Test	TLV	Test	TLV	Test	TLV	Test	TLV	
11/28/72	Manifest	T T	50	0 0		0	50	0 0	100	0	10	None
11/28/72	Coal	T T T	50	0 0		0	50	0	100	19.75	10	Heavy
11/29/72	Coal	T	50	0 0		0	50	0	100	9.75	10	Medium
11/29/72	Grain	T	50	0		0	50	0	100	2.93	10	Light

App. 10

Report on Research Work
FRA Purchase Order 810-4361

Asbestos Emissions From Railroad Brake Shoes

by
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and
J. M. Wandrisco

U. S. Steel Corporation
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Monroeville, Pa. 15146

July 1978
Final Report

Prepared for

U. S. DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION
Office of Rail Safety Research
Washington, DC 20590

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<table>
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Samples of airborne emissions from three brands of composition railroad brake shoes were collected during tests on a full-scale-railroad-wheel-testing dynamometer under controlled conditions simulating a high-energy-dissipation braking. Asbestos-fiber concentrations, as measured by individual samples, ranged from zero to 0.067 fiber longer than 5 microns/cm^3 – far less than the current permissible occupational exposure limits of 2 fibers longer than 5 microns/cm^3 of air specified on the OSHA Asbestos Standards.</td></tr>
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Composite Materials</td><td colspan="2">18. Distribution Statement</td></tr>
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Conversion Factors

1 mph	=	0.447 m/s
1 hp	=	0.746 kW
1 rpm	=	0.105 rad/s
1 inch	=	25.4 mm
1 foot	=	0.3048 m
1 lb	=	4.45 N
1 ton	=	0.907 tonne

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[2] Introduction

In recent years, the use of composition brake shoes instead of cast-iron brake shoes has been generally accepted by the railroad industry, and practically all cars being constructed have brake system components designed for the use of composition shoes. Also, the brake-system components in many of the older cars in service are being modified so that composition shoes can be used. Modification of older cars is necessary because with composition shoes only half the brake-shoe pressure needed with cast-iron shoes is required to produce the same retardation. The average coefficient of friction of composition shoes is about 0.30, whereas that of cast-iron shoes is about 0.15. Consequently, the railroad favors the use of composition shoes because of their greater braking efficiency.

There are three principal suppliers of composition brake shoes to the domestic railroad industry. Each manufacturer has developed a brake shoe containing various components that are bonded together by resin compounds. Their compositions are considered proprietary, but the service performance of all types has been similar.

Inasmuch as one of the components of composition brake shoes was reported to be asbestos, the subject study was proposed by the Federal Railroad Administration, Office of Rail Safety Research, because of concern that the airborne emissions that result from decomposition of the brake shoes during

braking might contain sufficient asbestos fibers to create a health hazard.

The criterion for determining whether a health hazard exists is the present OSHA Asbestos Standard which establishes a permissible occupational exposure limit of 2 fibers longer than 5 microns per cubic centimetre of air, based on an 8-hour time-weighted average exposure. The Standard also states that exposures shall not exceed 10 fibers/cubic centimetre for any period during the workday. OSHA has proposed to reduce the 8-hour exposure limit to O.S fiber/cm^3, with a ceiling-limit of 5 fibers/cm^3, as determined over a period of up to 15 minutes.

[3] Materials and Experimental Work

Wheel-Testing Dynamometer

The railroad wheel-testing dynamometer at the U. S. Steel Research Laboratory in Monroeville, Pennsylvania was used to perform controlled tests of simulated railroad braking conditions with composition brake shoes. Samples of airborne emissions were obtained both under confined atmospheric conditions and under conditions simulating the actual turbulent-air-mixing effects resulting from train operations.

The wheel-testing machine, Figure 1, is a large inertia dynamometer driven by a mill-type electric motor with a power output up to 450 hp and speeds up to 1500 rpm. Standard full-scale railroad wheels

from 30 to 40 inches in diameter can be tested, Figure 2, under conditions of loading and braking that simulate normal existing railroad service, or under exaggerated conditions of loading and braking far in excess of those encountered in service.

Tests Conducted

For the tests used in this study, a high-energy-dissipation braking condition known as drag braking was simulated so that a sustained heat buildup would occur and the brake shoe would decompose at a relatively high rate. This drag braking is similar to that which would occur in normal railroad service when a loaded 70-ton car with 33-inch-diameter wheels is retarded in descending a grade. The dynamometer was fitted with a 33-inch-diameter wheel and a single composition brake shoe. A braking force of 1500 pounds was exerted by the shoe onto the wheel tread for 50 seconds of each minute for a duration of 9 minutes, with the equivalent translatory speed of the wheel maintained at 45 miles per hour. The energy-dissipation rate for these conditions was 50 hp. During the tests, air samples were simultaneously collected for analysis, as will be described in a later section, at locations 6 inches, 6 feet, and 17 feet from the brake shoe, Figures 3, 4, and 5.

Similar tests were conducted with brake shoes of the compositions produced by the three principal manufacturers, which are designated in this report as A, B, and C. Each type of brake shoe was also tested

under two different air-circulation conditions, the first with the wheel rotating in nonturbulent air, and the second in a turbulent-air condition produced by an exhaust fan to simulate braking of a train in motion.

[4] Air Sampling and Analysis

Air samples were collected and analyzed in accordance with the USPHS/NIOSH membrane-filter method for evaluating airborne asbestos fibers. Samples were collected by drawing air at a rate of 2.0 litres per minute through a cellulose ester membrane filter (Millipore Type AA, O.B micron pore size) by means of a battery-powered personal sampling pump. During sampling, the top cover of the plastic filter cassette was removed to provide an even particle distribution over the entire filter. Sampling pumps were calibrated immediately, prior to, and after, the survey.

After collection, a wedge-shaped section was taken from each filter, rendered transparent in a one-to-one solution of dimethyl phthalate and ethyl oxalate, and examined for asbestos count and characteristics under phase-contrast microscopy at 450X magnification.

The asbestos-fiber-count procedure consists of comparing fiber length with calibrated circles, and counting all fibers greater than 5 micrometres in length within a given counting field area. The Porton reticle, a glass plate inscribed with a series of circles

and rectangles, is used for this purpose. The reticle, placed in the eyepiece of the microscope, is calibrated with a stage micrometer. The square on the left side of the reticle, divided into six rectangles, is defined as the counting field.

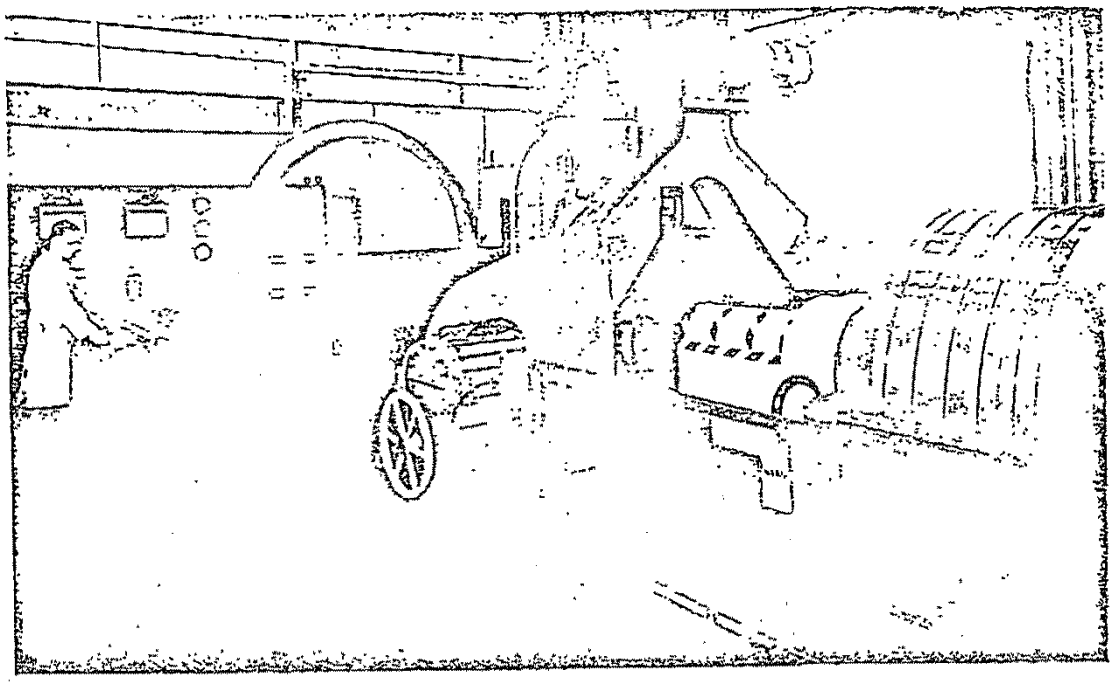
Discussion and Summary

As is shown in Table I, the airborne asbestos concentrations emitted during simulated severe railroad drag braking by each of the brake-shoe compositions tested were negligible. The measured concentrations were in the range zero to 0.067 fiber/cm^3, far lower than the permissible limits of both the present and proposed OSHA Asbestos Standard. One hundred counting fields were examined on each sample filter, and at most, only one fiber was observed per 100-field area. These extremely low fiber counts may possibly be attributed to background levels alone.

Table I

Asbestos Emissions From Composition
Brake Shoes During Drag Braking
Energy Dissipation Rate, 50 hp
Sampling Duration, 9 minutes

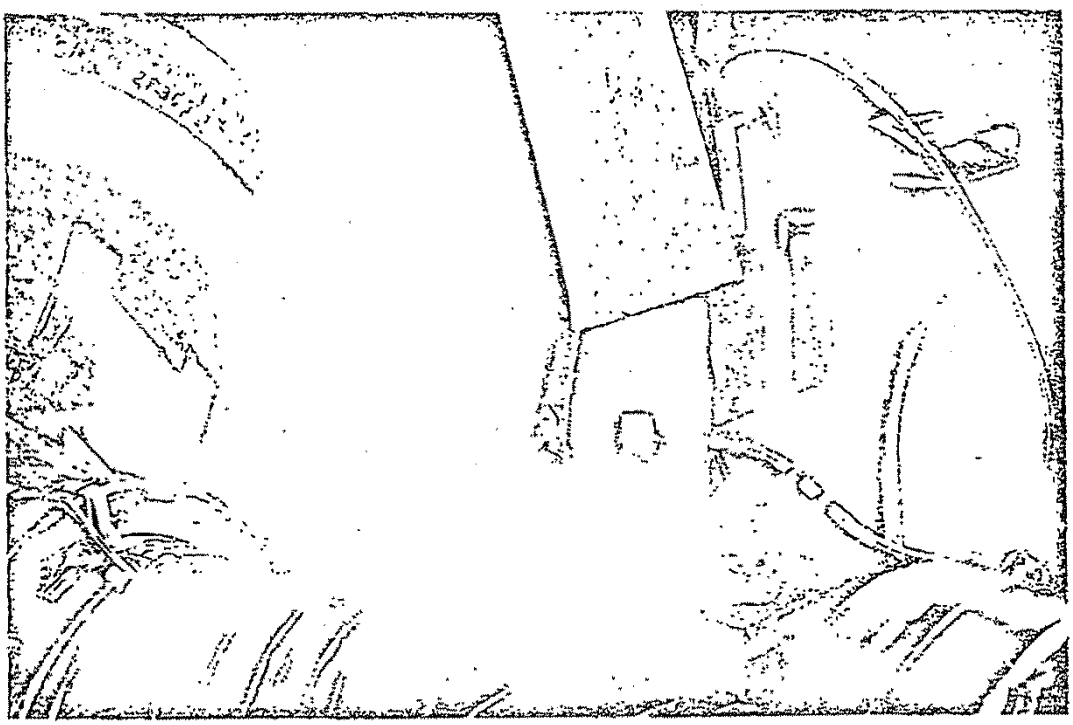
Air Circulation Past Wheel	Sample Collection Distance From Brake Shoe	Asbestos Concentration for Different Brake Shoes, fibers/cm^3		
		A	B	C
None	6 inches	0.000	0.000	0.000
None	6 feet	0.000	0.067	0.067
None	17 feet	0.000	0.067	0.067
Turbulent	6 inches	0.000	0.000	0.067
Turbulent	6 feet	0.000	0.000	0.000
Turbulent	17 feet	0.000	0.000	0.000



VIEW OF WHEEL–TESTING DYNAMOMETER
U. S. STEEL RESEARCH LABORATORY, MONROEVILLE, PA.

76-H-045(018)

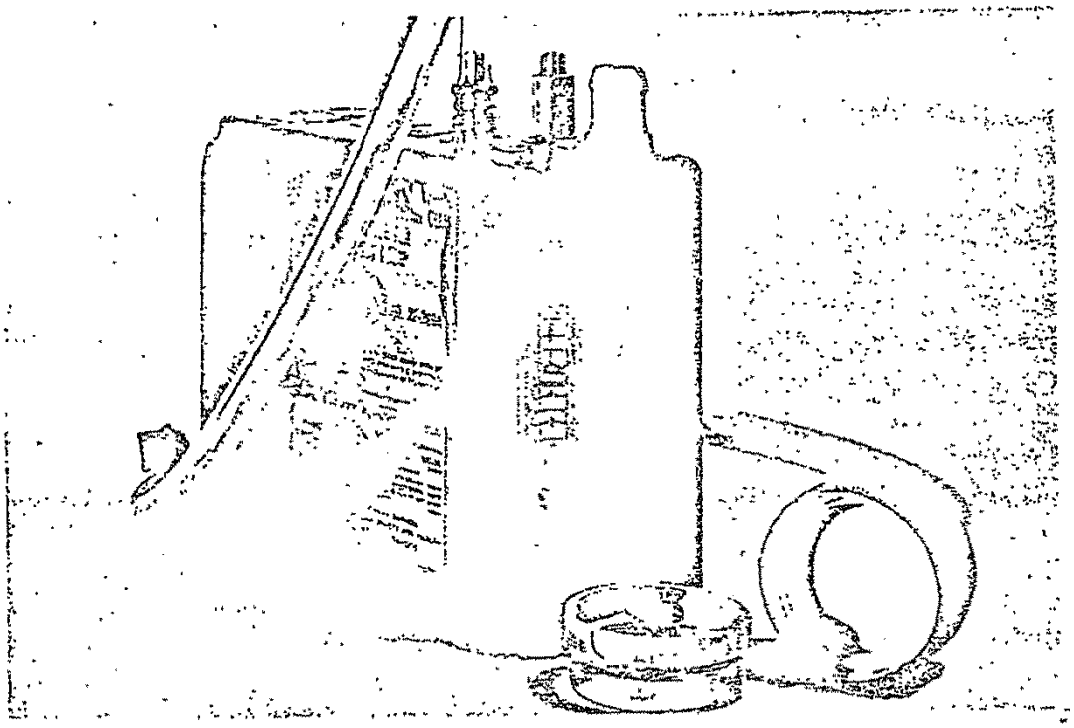
Figure 1



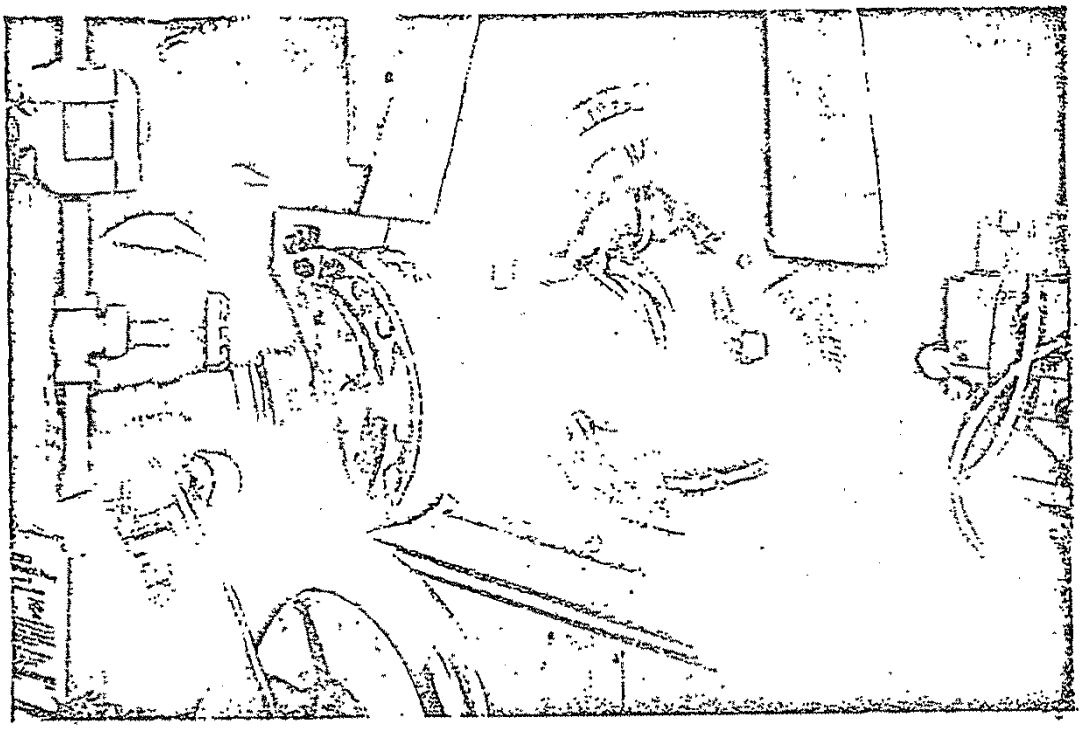
VIEW SHOWING 33-INCH-DIAMETER WHEEL IN DYNAMOMETER.

76-H-045(018)

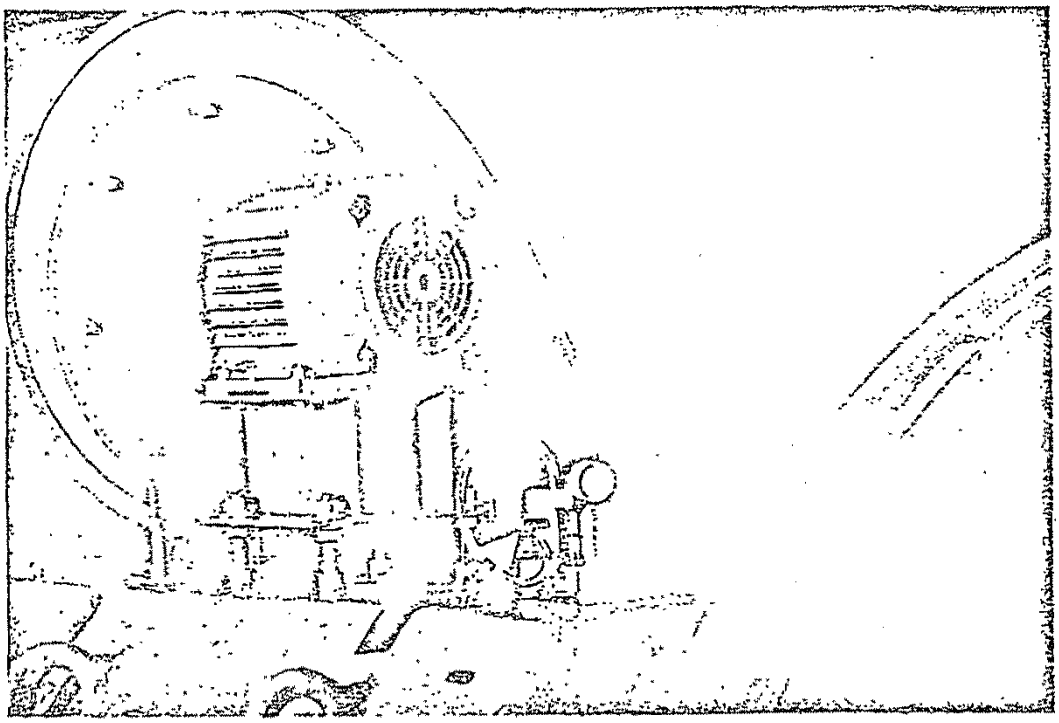
Figure 2



PORTABLE AIR-SAMPLING PUMP AND FILTER CASSETTE.



VIEW SHOWING SAMPLING PUMPS LOCATED 6 INCHES AND 6 FEET FROM BRAKE SHOE.



VIEW SHOWING SAMPLING PUMP LOCATED 17 FEET FROM BRAKE SHOE.

UNITED STATES GOVERNMENT

Memorandum

DEPARTMENT OF TRANSPORTATION

FEDERAL RAILROAD ADMINISTRATION

DATE: APR 19 1978

In reply
refer to RRD-33-528

SUBJECT: Brake Shoe Asbestos Emission Test Reports

FROM: Chief, Rail Vehicle Safety Research Division

TO: Director, Office of Rail Safety Research

The following reports were reviewed and are synopsized herein:

1) 1971 WABCO Dynamometer Tests (Cobra Brake Shoes)

2) June 1977, Johns Manville Study of the MBTA (Cobra Brake Shoes)

3) January 1978, Ryckman, Edgerly, Tomlinson and Associates, Study of Anchor Brake Shoes at ASF, Granite City, Ill.

4) February 1978, U.S. Steel Dynamometer Tests (Cobra, Anchor, and Comet Brake Shoes)

Summary

It is apparent from the nature of railroad operations that if train crews are exposed to airborne asbestos at

all, it would be for relatively short-term, intermittent time segments rather than continuously. In between these potential exposure periods, (i.e. when the train's brakes are being applied), levels would essentially be zero since no asbestos would be omitted. Accordingly, it is appropriate to compare all the measured test values to the ceiling concentration level further than the time-weighted average level since it is virtually impossible to exceed the latter.

All of the test results clearly indicate levels far below this ceiling concentration level. Based on these findings, it appears highly unlikely that train crews are subjected to adverse asbestos levels. The following thoughts are offered relative to the individual reports:

1) The 1971 WABCO study is extremely thorough and can not be faulted since at that time this method of reporting data was typical. Unfortunately the results, in their reported format, are not comparable to later tests.

2) The Johns Manville MBTA study points out several facts. As is the case with automotive brake repair shops, there does not appear to be any asbestos threat to car repairmen working around brake shoes in repair facilities. Nowhere else were significant amounts detected, however, in one case the amount of emissions measured outside the car near the brake were virtually the same as was measured inside the same car, during the same test, at a passenger seating position. One can only wonder if this has any significance in

terms of transmission of the fibers from outside the car to inside the car.

3) The U.S. Steel and the Ryckman, et. al,/ASF Dynamometer tests yielded essentially the same findings. There were differences in sampling locations, fan location and size, and braking force, but the outcome was essentially the same – single brake shoes emit 0.7.-0.8% of the maximum allowable ceiling concentration level.

/s/ Don Devine
Don Devine

STUDY RESULTS

OSHA (1) Standards	1971 WABCO/Cobra Tests	1977 Johns Manville MBTA Study	1978 ASF/Anchor Tests	1978 U.S. Steel
T/A (2) – 2 fibers/cc C (3) – 10 fibers/cc	(4)	"Worst Case" .023 f/cc (5) 0.050 f/cc (6) .0097 f/cc (7) .0048 f/cc (8)	"Worst Case" 0.80 f/cc (9)	"Worst Case" .067 f/cc (10)

(1) Only fibers 5 microns in length or longer are counted. Conventional optical microscopy at 400-450x is used.
(2) TIME weighted average for 8 hours.
(3) Maximum allowable ceiling concentration (not to be exceeded for any time duration).
(4) Results of these tests were given in weight of asbestos omitted per brake application and are therefore not comparable to other tests. No fiber size descriptions or counts are given.
(5) Value observed in MBTA cars at various seating locations.
(6) Value observed on MBTA subway station platform.
(7) Value observed in a car house at inspection and maintenance areas.
(8) Value observed in ambient air outside car house.
(9) Measured 15 ft. downward of the shoe with a fan on. 6,000 lbs brake shoe load
(10) This value was observed for: Comet 6' frame shoe – fan off
3,000 lbs brake shoe load 17' frame shoe – fan off
Anchor 6' frame shoe – fan off
17' frame shoe – fan off
6" frame shoe – fan on