PLAINTIFF'S EXHIBIT

ED 1616

ASBESTOS REMOVAL FROM PRODUCT MATERIALS

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Schedule No. 7-6-2
Retain Until 11-93

Significant progress has been made toward removal of asbestos from product materials over the last three years. An exception is in passenger car brakes where removal is slipping due to stretched out cycle plans and engineering issues. This paper reviews background and status of the whole effort and proposes a plan that will accommodate corporate objectives.

Background

- Removal Plan - Starting in 1979, with CEPL-10 and with subsequent directives from the Manufacturing and Supply Subcommittee, and the Technical Affairs Subcommittee, a plan was developed to remove asbestos from product materials. A Program Direction Letter was isssued (8-18-81) laying out NAAO and DPO Car and Light Truck objectives and timing for new and C/O vehicles. No specific funding was provided but objectives were to be reviewed in case of "disproportionate expense". Heavy Truck and Tractor agreed to be included.

- Regulations - Original stimulus was the threat that OSHA and EPA would soon tightly regulate asbestos with the result that Ford and particularly our suppliers could no longer use or manufacture asbestos containing products. Worst case fears have not materialized. However, in November 1983, OSHA reduced permissible shop exposure level from 2 to 0.5 fiber per cc to take immediate effect. Lower limit is not expected to shut down any major source, but added to other pressures (waste handling, air quality) makes elimination more evident as the only long range practical solution.

- Litigation - A further and increasing concern is the large number of lawsuits claiming illness due to on-the-job asbestos exposure. Ford has so far avoided being involved in any asbestos case settlements by proving no role in the plaintiff's exposure. Ford is named as co-defendent, on an ongoing basis, in about 60 cases; half of which are shipyard worker type and half of which are mechanics/repairmen type. GM reportedly has settled (1) brake lawsuit out of court and won (1) lawsuit in court. Bendix has reportedly settled several cases out of court.

- Competition - GM reportedly plans to be asbestos free in brake linings by 1985. An analysis of several 1984 GM products indicate they are currently more than 50% asbestos free in brakes, including all disc fronts. 1984 Chrysler products are about 38% asbestos free in brakes. 1984 VW Rabbit is asbestos free. All imports are thought to still use asbestos in their brakes. Situation is mixed in other products. Ford is reported the leader in nonasbestos gaskets while GM's far ahead in bulk sealers and adhesives. Failure of users to move together creates a facility planning and inefficiency problem for supplier industry.

Status

- Progress toward asbestos removal has been considerable in all but certain of the friction products area. Status by category (summarized in Exhibit 1) is as follows:
  - Gaskets and Shaft Seals - significant progress has been made toward "all free by 1985" target - exceptions are engine head and carb spacer gaskets and some tractor applications.
  - Bulk Sealers & Adhesives - on target: "noncritical applications to be free by 1985; others concurrent with reengineering opportunity".
  - Plastic Fillers, & Misc. - on target: "predominantly free by 1985".
  - PIA Parts - no specific action targeted or implemented.

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- Friction Products - Passenger car brakes will not meet the "predominantly free by 1987" target due primarily to changed cycle plans now calling for C/D Panther cars, (see Exhibit 2); Light Truck is planning to be asbestos free by 1985; production problems delaying planned 1984 changeover.

. Friction Products Plan, Brakes - Car Chassis Brake Engineering reviewed alternatives for meeting a "predominantly free" target under the new cycle plan. Three plans were investigated:

A. All asbestos out by 1987¼. Assessed as not containable from a manpower, dynamometer, and supplier capability standpoint.

B. All asbestos out by 1989 by completing Escort/Tempo in 1987, Panther/Mark in 1987¼ and by allowing Fox vehicles to phase out (1989); again not containable, same reasons.

C All asbestos out by 1989 by extending FWD (DN-5) technology to Escort/Tempo in 1987¼, permitting Fox to phase out; and outside sourcing to Bendix of Panther/Mark (by 1987¼). Assessed as containable for $1.3 to 2M added engineering cost with confidence of 65%. Risks include: potential noise deterioration; containability of Panther job by Bendix; and possibility of Fox continuing past 1989 or volume increases. Plan C details are shown in Exhibit 3.

Proposal

Separate friction products, which are clear health and legal concerns from other uses that are not, by pursuing the following plan:

. Friction Products - Pursue the FWD and Panther nonasbestos programs (Chassis plan C). Develop and fund equivalent programs for Heavy Truck and Tractor. It appears that asbestos brakes will continue to be the focus of litigation and health risk and that our competitors are proceeding to eliminate asbestos in brakes.

. Gaskets and Seals/Bulk Sealers/Other - Proceed with elimination under CEPL-10 and program direction now in effect.

. PIA's/Black Box/and Remaining Problem Applications - Organize a subcommittee on asbestos elimination (in general) under MVMA with the following objectives:
  - Exchange and evaluate the experience of manufacturers and suppliers in the development of asbestos free components and materials.
  - Evaluate the current knowledge of the health and safety risk from the various automotive products containing asbestos, both up and down stream from the assembly plant.
  - Combine the two and make an MVMA recommendation to member manufacturers for a prioritized removal schedule that makes sense and if followed by all would result in the optimum cost/benefit way to reduce the automotive industry's share of the asbestos health risk. The recommendation would be independent from consideration of threats of regulation and litigation which have led to the present confusion.

. Imported Vehicles - EAO should be informed of our plan and requested to stay in step for export vehicles. Liaison should be established between counterpart product engineers reponsible for the substitutions.

Supplier Research, Fasteners
and Materials Department
November 28. 1983

D2-198.2

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Exhibit 1

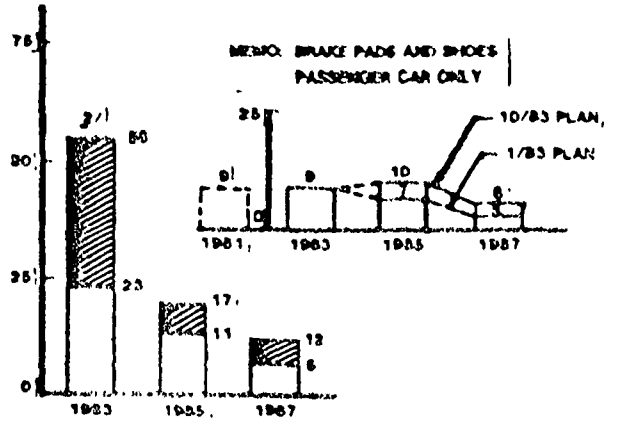
ASBESTOS MATERIAL APPLICATIONS - NORTH AMERICAN FORD PASSENGER CARS, TRUCKS & TRACTORS

. Target Statement & [Status] — Actual Application Count 1/

Friction Materials (Brake Shoes, Pads, Clutches)

. All wet clutch applications asbestos free by 1983 [on target]

. Brake & manual trans. clutches to be predominately asbestos free by 1987 - Car & Lt. Truck (Heavy Truck & Tractor complying) [Pass. car brakes possible miss - see memo. (6) of (9) remain after 1987]



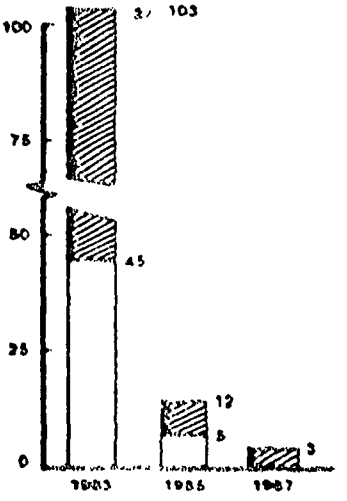
Gaskets & Seals

. All gaskets & shaft seals to be asbestos free by 1985.

[Engine head & carb mtg gaskets probable miss (5)]

[Tractor misc. gaskets probable miss (7)]

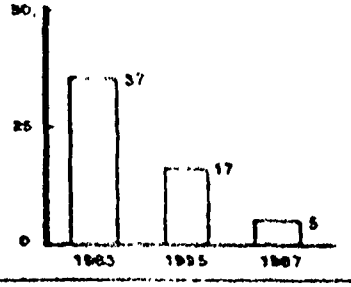
[All others on target]



Bulk Sealers & Adhesives

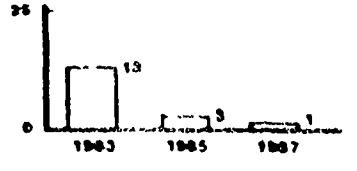
. All noncritical applications to be asbestos free 1985.

. Others at first reengineering opportunity. [on target]



Other (Plastic Fillers, Heat Insulators, Misc)

. Predominately asbestos free by 1985. [on target]



1/ ONE APPLICATION IS ONE GENERIC ASBESTOS SUBSTITUTION TASK AND MAY STAND FOR ONE OR MANY LIKE PARTS SERVING THE SAME FUNCTION IN SEVERAL VEHICLE MODELS

2/ SHADED PORTION INDICATES APPLICATION EXCLUSIVELY HEAVY TRUCK AND OR TRACTOR UNSHADED MIXED CARS AND TRUCKS

D2-204

R. A. Husen
November 17, 1983

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EXHIBIT 2

Car Chassis Brake
Asbestos Removal Plan 10/83

A = Asbestos Friction Material

Vehicle	Application 1/	Appl. Code	Brake Material 1983	1984	1985	1986	1987	1988	1989	1990
Escort/Lynx	Disc Brake - Front	401	A	A	A	A	Non-Asb. W/Non-Asb. Backing			
	Drum Brake - Rear	402	A	A	A	A	Non-Asb.			
Tempo/Topaz	Disc Brake - Front (except diesel)	401	A	A	A	A	Non-Asb. W/Non-Asb. Backing			
	Drum Brake - Rear (except diesel)	402	A	A	A	A	Non-Asb.			
	[Note. Diesel powered Tempo/Topaz to be non-asbestos 1984j.]									
LTD/Marquis	Disc Brake - Front	401	Non-Asb. w/ asb. backing 2/			DROP				
Mustang/Capri T'Bird/Cougar	Disc Brake - Front	401	Non-Asb. 2/	A 3/	A	A	A	A	Mx-12 Non-Asb.	
	Disc Brake - Front (2.3L Mustang Only)	401	A	A	A	A	A	A	Must. Drop	
All Above FMC Vehicles	Drum Brake - Rear	402	A	A	A	A	A	A		
Continental & Mark VII	Disc Brake - Front	401	A	A	A	A	A	A	A	New FWD Mark Non-Asb
	Disc Brake - Rear						DROP Cont			
	[Note. 4 Wheel Disc Brake System]						Start FK-5			
FB-9	Probable 4-Wheel Disc Brake System	401	-	-	-	-	Non-Asbestos			
Crown Vict / Sr. Marquis, Town Car & Mark VI	Disc Brake - Front	401	A	A	A	A	A	A	A	A
	Drum Brake - Rear	402	A	A	A	A	A	A	A	A
BN-5	Disc Brake - Front	401	-	-	-	Non-Asbestos				
	Drum Brake - Rear	402	-	-	-	Non-Asbestos				
Summary of Asbestos Applications	Disc Brake	401	5		6		4		2	
	Drum Brake	402	4		4		2		1	
		TOTAL	9		10		6		3	

1/ One application is one generic asbestos substitution design/development task and may stand for one or many like parts in similar vehicles and components.
2/ Asbestos backing used with non-asbestos semi-met is counted as a plastic filler (other) application, not as friction material.
3/ Hybrid disc brake system, inner pad asbestos, outer pad non-asbestos semi-met.

Advanced Vehicle Engineering
and Technology
October 3, 1983

BL-160

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[Exhibit 3]

CAR CHASSIS NONASBESTOS BRAKE PLAN - PROPOSAL C

Assumptions:

- Drop manual brakes.
- Front wheel drive car engineering done 1987½ (or so).
- Ignore Fox (to phase out no later than 1989).
- Outsource Panther conversion to Bendix.
- Knowledge being gained on DN-5 is transferable to FWD conversion.

Plan/Cost

	Engineering Cost x $1000 1984	1985	1986	Total	Tooling Cost
1987½ FWD	50	150	200	400	400
1987 Panther/Mark O/S to Bendix	200	300	400	900	450
				1300	850

Risks

- Fox platform may continue beyond 1989 if tax, fuel costs, etc. dictate market.
- Some noise deterioration risk.
- Bendix will take on the project.

Per Bill Kath
November 14, 1983

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