

**PLAINTIFF'S
EXHIBIT**

DOW-206

ALTERNATIVES TO ASBESTOS GASKETS AND PACKING

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ST0008960

PROBLEM DEFINITION

1. Revised OSHA Regulations
2. Limited Product Data

OBJECTIVES

1. Find Alternatives
2. Revise Dow Specifications
3. Relay Results

APPROACH FOR FINDING SUITABLE ALTERNATIVES

1. Gather Information
2. Field Testing
3. Information Exchange

APPROACH FOR FINDING SUITABLE ALTERNATIVES

1. GATHER INFORMATION
2. Field Testing
3. Information Exchange

INTERNAL DOW SOURCES

1. Technology Centers
2. Maintenance Superintendents/Managers
3. Buyers/Users

NORTH AMERICAN CONTACTS

Phil Ardire (Eastern Division)
Jim Wilkes (Louisiana Division)
Mike DeFrain (Louisiana Division)
Ralph Fegley (Michigan Division)
Scott Cummings (Michigan Division)
Ron Reeves (Western Division)
Raymond Sulin (Western Division)

Dave Dunn (Ft. Saskatchewan)
Rick Kwasny (Ft. Saskatchewan)
Dominic Grandinetti (Ft. Saskatchewan)
John Billham (Sarnia)
Tom Calvert (Sarnia)
Dick DeLine (USA Operations)
John Barton (Demolition/Spare Equipment)
Dave Swisher (Texas Operations)
Randy Johnson (Texas Operations)

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GASKET/PACKING MANUFACTURERS

Manville	Durabla
Klinger	Garlock
Chesterton	Lamons
Flexitallic	Lydall
Union Carbide	Gore

TECHNICAL INSTITUTES

Alternate Materials Institute
Chlorine Institute
Valve Manufacturers Association
Vinyl Chloride Safety Association

OTHER COMPANIES

Exxon
DuPont
Monsanto
Amoco

APPROACH FOR FINDING
SUITABLE ALTERNATIVES

1. Gather Information
2. FIELD TESTING
3. Information Exchange

FIELD TESTING

1. MANDATORY Field Tests
2. Initial Tests Isolated
3. Six Month Duration

APPROACH FOR FINDING
SUITABLE ALTERNATIVES

1. Gather Information
2. Field Testing
3. INFORMATION EXCHANGE

INFORMATION EXCHANGE

1. Bulletins
2. Technology Exchanges
3. Dow Engineering Specifications
4. Data-Base

DATA-BASE EXAMPLES

ENTER: Nitrogen

PRINT: RECOMMEND

Non-Asbestos Compressed Sheet

Aramid Fiber with Nitrile-Butadiene Rubber Binder

1/16" Thickness (Maximum 1/8")

Maximum 300°F in a 300 lb. Flange

DATA-BASE EXAMPLES

ENTER: Chlorine

PRINT: IN TEST

Service: 100% Dry Chlorine Gas

Maximum Temperature: 130°F

Maximum Pressure: 100 Psig

Material: Garlock 3510

Start: 02-28-84

Status: Satisfactory

DATA-BASE. EXAMPLES

ENTER: Ammonia

PRINT: NO RECOMMENDATION

CURRENT RESULTS

1. Non-Asbestos Gaskets/Packing
2. Cost Comparison
3. Acceptable Substitutes

NON-ASBESTOS GASKETS

1. Compressed Sheet
2. Teflon
3. Flexible Graphite
4. Spiral Wound

NON-ASBESTOS PACKING

1. Teflon
2. Graphite System
3. Teflon/Graphite

COST COMPARISON GASKETS

Asbestos	1
Compressed Sheet	2
Teflon	4 - 12
Flexible Graphite	5
Spiral Wound	4 - 11

COST COMPARISON PACKING

Asbestos	1
Teflon	1.5
Graphite System	2.5
Teflon/Graphite	2

ACCEPTABLE SUBSTITUTES

1. Utilities
2. Steam Service

CONTINUED EMPHASIS

1. Live-Loading of Valves
2. Non-Asbestos Colors
3. Field Tests and Data-Base

POINTS TO REMEMBER

NO DIRECT REPLACEMENT

Manufacturer's Data Unreliable:

Maximum Temperature/Pressure

Chemical Compatibility

Manufacturers Major Conflicts

IMMEDIATELY AVAILABLE

Bulletins #1 and #2

Gasket/Packing List:

Generic Type/Manufacturers

Utility/Steam Gaskets

Data-Base Access Information

89680001SI