



E. I. DU PONT DE NEMOURS & COMPANY
WILMINGTON, DELAWARE 19898

ENGINEERING DEPARTMENT
LOUVIERS BUILDING

TO: J. C. Burgess-Brevard/Kings Mountain
R. L. Wootten-Cape Fear/Cooper River
B. M. Thomas-Circleville
H. E. Bradburn-Fayetteville
W. G. Ranson-Florence
H. F. Redmile, Jr.-Kinston
J. W. Tarrer, Jr.-May Plant
R. H. Muentner-Research Triangle Park
M. L. Farrar-Seaford
M. F. Gilmore, Jr.-Wash Works
V. E. Kleinfelter-PCEO

April 23, 1986

Daniel International Corporation
Daniel Building - 301 N. Main
Greenville, SC 29602

Attention: Mr. T. W. Harrison, Manager of Projects

Gentlemen:

REFRACTORY CERAMIC FIBERS AND FIBER REINFORCED INSULATION
POTENTIAL CARCINOGENIC EFFECTS

Attached for your information is a commentary regarding referenced matter.

It has been determined that most approved insulation materials listed in Du Pont's Engineering Standards do not contain RCF's. It is suggested that the installation of any insulation material be discussed with Du Pont's Project Engineering Division site management to insure that appropriate safety measures are employed.

Very truly yours,

PROJECT ENGINEERING DIVISION

P. J. Bengston
P. J. Bengston
Manager, Contract Services

PJB:dgb
Atch

Copy to: Bure 51111

Lets discuss.

Tom H.

letters-clg

PLAINTIFF'S EXHIBIT

CEL-1151

REFRACTORY CERAMIC FIBERS AND FIBER REINFORCED INSULATION
POTENTIAL CARCINOGENIC EFFECTS

Du Pont's Haskell Laboratory and Medical Division have completed a hazard determination study of aluminum silicate refractory ceramic fibers, an asbestos substitute material, and have classified this material as a potential carcinogen. Haskell Laboratory is recommending an AEL of 0.5 fibers/cc (8- and 12-Hour TWA) combined with procedures to minimize airborne fibers.

The basis for the classification is that aluminum silicate refractory ceramic fibers produced lung tumors in rats in an inhalation study. The incidence of tumors produced was similar to that produced by asbestos in the same study.

Since other respirable inorganic refractory ceramic fibers [noted as RCF(s), to include the aluminum silicate fibers] have shown similar effects in animal inhalation studies, the AEL Committee recommends that all RCF(s) be handled in the same manner as that recommended for respirable aluminum silicate refractory ceramic fibers. This recommendation holds unless specific data are available to show that a particular RCF(s) does not show the same biological response as seen with the respirable aluminum silicate refractory ceramic fibers. This recommendation does not apply to those refractory ceramic fibers for which other handling recommendations have been made.

Aluminum silicate refractory ceramic fibers have been used as a substitute for asbestos in high temperature (>1000°F) insulation applications. In addition, the aluminum silicate and other RCF(s) could be used as reinforcing fibers in other non-asbestos insulation.

The highlights of the recommendations are:

- o AEL of 0.5 respirable fibers/cc (8- and 12-Hour TWA)
- o Procedures to minimize airborne fibers
- o Respirators for all removal operations and for those operations where it is anticipated the AEL will be exceeded
- o Medical surveillance for workers who handle RCF(s) and RCF(s) reinforced insulation
- o Disposal of RCF(S) containing waste in an asbestos landfill

BACKGROUND

Aluminum silicate refractory ceramic fibers produced a carcinogenic response in rats and hamsters exposed by inhalation to high concentrations (95-200 fibers/cc) of respirable fibers or when fibers were injected into the abdomen of rats. The response was similar to that of asbestos.

Evaluation of these animal studies led Haskell Laboratory's AEL Committee to recommend an AEL of 0.5 fibers/cc as an 8- or 12-Hour TWA combined with procedures to minimize the generation of airborne fibers.

No detailed epidemiological studies have been conducted on these compounds, however the Thermal Insulation Manufacturers Association (TIMA) reports that annual medical examinations of employees who work for member companies making these fibers have shown no occupationally related health effects in 25 to 30 years of making commercial quantities of RCF(s). TIMA is sponsoring an epidemiological study of workers exposed to RCF(s). The study results, however, will not be available for two to three years.

In addition to the aluminum silicate, those refractory ceramic fibers (e.g. silicon carbide and a titanate) which have been tested in animals by inhalation in respirable size have shown the same type of effect as the aluminum silicate. Consequently, Haskell is extending its recommendation that all RCF(s) be handled in the same manner as that recommended for the respirable aluminum silicate refractory ceramic fiber unless there is data specific to a fiber that shows it does not cause the same biological response.

MATERIALS INVOLVED

Following is a list of materials currently in Du Pont Standards (SN200M and SN400M), which do contain RCF's:

<u>Code</u>	<u>Material</u>	<u>Manufacturer</u>
210	Cerablanket	Manville
210	Fiberfrax Durablanket	Carborundum Co.
210	Kaowool	Babcock & Wilcox
211	Cerawool Blanket	Manville
211	Fiberfrax Duraback	Carborundum Co.
408	Ceramospray	U.S. Mineral Products Co.
408	Ceramoshield	U.S. Mineral Products Co.

insulation commentary:clg
04/28/86

Construction Industry Hazard Communications/Right-To-Know

On May 25, 1987 any construction company that works in the state of North Carolina will fall under the same regulations and standards as general industry in regards to hazard communication/right-to-know legislation.

Attached are copies of various outlines that Daniel Corporate Safety has used to address this same legislation in the state of California, where construction came under these regulations May 1985.

We plan to use these guidelines to develop a program to address this legislation in regards to our employees on this site.

At present, we are in the process of attaining MSDS's for all known products that we use on a daily basis on this project.

Our next step will be to assign numbers to all MSDS's and to compile data from them in order to segregate all chemicals and mixtures that are defined as hazardous from the non-hazardous materials.

I plan to use a separate numbering system for hazardous material MSDS's.

Once we have all the MSDS's cataloged and compiled into notebooks or binders we will start developing a program to properly train and document training of our supervisors and employees.

Once we have our supervisors trained we will issue notebooks/binders containing all MSDS's, with hazardous separated from non-hazardous materials. Presently, I am considering that these notebooks/binders of MSDS's be issued to all managers, department heads and craft heads. However, if conditions warrant I may include all first line supervisor's in this distribution.

I plan to try to have training program finalized by January 1987 so that we have sufficient time to properly train all personnel by the May 25, 1987 deadline. In addition, our new hire orientation will be modified to address this aspect during the hiring process.

At present, there are only 2 areas where I feel that we may need Celanese's assistance, they are: (1) a master copy of all MSDS's so we can address the areas where Daniel/Davis employees might be exposed to hazardous materials in our training phase of implementation (2) possible use of some of their audio/visual aids during training aspect.

In closing, we are considering the feasibility of having a meeting between Celanese's environmental supervisor and Daniel's industrial hygienist to make certain both companies are on the same path and working toward the same goals in regards to this subject.

Terms and Definitions

Acute Health Effect - Changes in your health that occur in a short time period. Immediate changes in your health, such as dizziness, stinging or watery eyes, or breathing difficulty, that are caused by breathing, swallowing or touching a harmful chemical.

Boiling Point - The temperature at which a liquid boils or becomes a gas.

CAS Number - Chemical Abstract Service Number. The chemical abstract service assigns a unique identifying number to every chemical or mixture. This number helps identify chemicals that are very similar, or share the same name.

Carcinogen - Any substance that causes cancer, or makes that body more vulnerable to cancer.

Chemical Family - The larger group of related substances to which a particular chemical belongs. For example, isopropyl alcohol is part of the larger alcohol family. The chemical family can tell you about other substances similar to the one on your material safety data sheet (MSDS).

Chemical Name or Identity - The name that a product is sold by. This section of an MSDS also includes a formal chemical or technical chemical name and any other commercial names for this chemical.

Chronic Health Effects - Changes in your health that take place over a period of weeks, months or years caused by contact with a harmful chemical. Examples of chronic health effects include kidney or liver damage, lung damage, or even cancer.

Conditions To Avoid - Any conditions that might cause a chemical's substance to change, such as high temperatures, water or sunlight.

Dermatitis - Skin inflammation characterized by itching and redness of the skin.

Dyspnea - Difficult breathing; feeling short of breath.

Emphysema - Disease characterized by difficulty in breathing, or coughing which occurs during exertion.

Evaporation Rate - Tells how quickly a substance becomes a gas by comparing it to either butyl acetate, which evaporates slowly, or ether, which evaporates quickly. A chemical with a high evaporation rate turns into a vapor or gas easily and poses a greater risk of inhalation and should be used in a well ventilated room.

Explosive Limits - The range of gas or vapor concentration (strength or amount) that will burn or explode near a spark, heat or flame.

Extinguishing Materials - Materials recommended for use in putting out fires, such as water, foam, alcohol foam, carbon dioxide (CO²), dry chemical, or sand.

Terms and Definitions

Page 2

Flash Point - The lowest temperature at which a substance will generate enough vapor above the liquid to ignite.

Hazardous Chemical - Any chemical which is a physical hazard or a health hazard.

Hazardous Decomposition: A list of hazardous materials that may be produced if a substance is exposed to heat, flame, oxidation, or other chemicals.

Health Hazard - Any chemical for which at least one valid scientific study demonstrates that the chemical could cause acute or chronic health problems to exposed employees.

Incompatibility - A list of substances which cause a chemical to react or change when they are mixed or come in contact.

LD 50 - Lethal Dose 50%. The amount of substance that will kill 50% of the animals receiving it. This dose is usually measured in milligrams per kilogram of body weight.

MSDS - Material Safety Data Sheet. A fact sheet containing important health and safety information about chemicals in your work place. An MSDS for each chemical in your work place is available for your reference.

Mutagen - An agent that causes changes in genes. Genetic changes may be inherited by offspring.

NIOSH - National Institute for Occupational Safety and Health. A research group that recommends substances to OSHA for regulation in the work place.

OSHA - Occupational Safety and Health Administration. An agency of the U.S. Department of Labor responsible for enforcing regulations that protect worker health and safety.

Percentage Volatile by Volume - The amount of a liquid or solid that can evaporate (becomes a gas at room temperature). Substances with a high percentage can generate a higher concentration in an enclosed area.

PEL - Permissible Exposure Limit. The amount of a substance with which you can safely work for a given period of time. PEL's are legally enforced by the Occupational Safety and Health Administration.

Physical Hazard - Any chemical that is a physical hazard, a combustible liquid, a compressed gas, an explosive, a flammable solid, liquid or gas, an organic peroxide, is pyrophoric, is reactively unstable, or is water reactive.

Polymerization - A chemical reaction in which molecules of a substance form a long chain and give off energy. If this process happens quickly an explosion may occur.

Terms and Definitions

Page 3

Pulmonary Edema - Fluid buildup and swelling in the lungs caused by lung tissue damage.

Reactivity - A description of the conditions (such as strong sunlight, heat or flame) which cause a chemical to change, or react.

Right-To-Know - The federal Hazard Communication Standard and similar state laws that provide workers with information on chemicals in the workplace.

Sensitization - Repeated contact with a substance causing reactions that becomes increasingly severe; such as an allergic reaction.

STEL - Short Term Exposure Limit; the highest concentration of a substance to which you can be safely exposed for a 15 minute period.

Specific Gravity - The comparison by weight of an amount of a substance to an equal amount of water at a temperature of 39.2 degrees Fahrenheit.

Teratogen - Any substance that causes damage to an embryo or fetus (in humans, an unborn child) without a substantial affect on the mother.

TLV - Threshold Limit Value. The highest amount of a substance that can be safely inhaled day after day without affecting your health. TLV's are measured in Parts per Million (PPM) for gases and vapors and Milligrams per Cubic Meter (mg/m^3) for dust, mist, and fumes. Due to the fact that out of 6 million existing chemicals and chemical mixtures, only about 600 have been assigned TLV's, you may not find a TLV listed on many material safety data sheets.

Trade Secret - The name of a chemical may be missing from an MSDS if that chemical is a legitimate trade secret of the company. A chemical cannot be called a trade secret if a chemist could easily discover its identity. If you need to know the name of a trade secret chemical for serious medical reasons, your employer must provide you or a medical professional with that information.

TWA - Time Weighted Average; a concentration exposure averaged over an 8 hour workday or a 40 hour work week.

Vapor Density - This compares the weight of a vapor or gas to the weight of an equal amount of air. Air is assigned a density of one. A substance with a vapor density higher than one is heavier than air. A substance with a vapor density less than one will rise in air. A vapor or gas with a vapor density greater than one will tend to fall to the bottom of tanks, or will move along the floor when released.

Vapor Pressure - A measure of how quickly a liquid turns into a gas, or evaporates. The higher a liquid's vapor pressure the faster it will turn into a gas. Liquids that turn into gas quickly at room temperature are called Volatile. Volatile substances can be easily inhaled and can explode or catch fire easily near heat or flame. Vapor pressure is measured in Units of Millimeters of Mercury (mm/Hg - like a mercury barometer).

Terms and Definitions

Page 4

Water Solubility - The amount of a substance that will dissolve in water; written as a percent of total.

WEEL - Workplace Environmental Exposure Limit; acceptable exposure limit adopted by the American Industrial Hygiene Association (AIHA) for chemical agents which have no current guidelines established by other organizations.

HAZARD COMMUNICATION (Script for Employee Introduction)

The Hazard Communication Standard is intended to make information on the hazards of materials available to all exposed employees and their supervisors. With this information, the employees and supervisors can work together to prevent injury from the use of these materials. This is a summary of the standard.

Slide I

Each manufacture or importer of chemicals or mixture of chemicals is required to determine what is known about the chemical, physical and toxicological properties of those chemical and mixtures. All of this information is to be summarized on a material safety data sheet or MSDS. This MSDS is the backbone of the hazard communication program so we'll explain one in detail later in the meeting.

The manufacturer must place a hazard warning label on each container shipped. If a distributor sells a material in smaller containers, each must have a comparable label on it. These labels must summarize the hazards and recommended protective measures that are on the MSDS for the material. These labels must be kept in good condition until the container is emptied. Secondary containers for use on the job must also be labeled unless it is for the immediate use of the employee filling the secondary container.

Hazard information may also be presented by warning signs or on work orders. Suppliers are to provide an MSDS with the initial shipment of a material and any time the MSDS is updated. The employer is to maintain a copy of each MSDS for use in hazard communication. If an MSDS is not received by the employer, he is to follow up with the supplier by phone and, if that doesn't work, in writing. MSDS's have information about flammability, reactivity, toxicity, chemical names of ingredients, recommended first aid and spill response procedures, and suggested personal protective equipment.

This information contains or is presented in technical terms which will be explained later along with the MSDS. Employees have the right to review and copy an MSDS for any material to which they may be exposed. They may also review and copy the list of materials which require an MSDS.

Slide II

The standard requires specific training. Each employee is to be provided with a summary of the standard; that's what were doing now. You are to be told what and where hazardous materials are on the job. We'll talk more about that when we discuss the potential hazards of the materials. We will continue to inform you of the proper procedures and protective equipment for safely using each material that you regularly work with. For new materials that you may be assigned to work with or near, the hazards, procedures, and protective equipment will be presented in a special tool box meeting or in the instructions given by your supervisor during job assignment.

If there are questions about hazards, procedures or protective equipment, you and your supervisor should review the MSDS's which are kept in .

The standard allows a manufacturer to withhold the names of chemicals in a mixture if they are a secret to the success of the formula and they can't readily be determined by routine chemical analysis. Health professionals may obtain these chemical names if they justify their need to know in writing or if there is a health emergency. They may be required to sign a secrecy agreement to receive this trade secret information.

The standard also requires a written hazard communication program and records of that program, such as, the MSDS's, chemical list, training records and a copy of the written program, be preserved.

This standard takes effect May 25, 1986.

HAZARD COMMUNICATION Summary of Standard

Hazard Evaluation

By Manufacturer Of Material

Manufacturer Prepares MSDS

Label, Other Warnings

Placed On Original Containers By Manufacturer

Must Be Preserved

Secondary Containers May Need Warning Label

Equipment Or Areas May Need Warning Signs

Work Orders May Include Hazard Information

MSDS

For Each Chemical Or Mixture

Contains

Hazard Information

Physical and Chemical Properties

First Aid Procedures

Spill Response Procedures

Protective Equipment Recommendation

Chemical Names

Technical Terms

Employee Training

Summary Of STD

Materials & Location In Workplace

Potential Hazards

Procedures And Equipment For Protection From Hazards

Where MSDS Are Kept

How Non Routine Work Will Be Covered

Trade Secrets

Chemical Names May Be Withheld

Health Professionals May Obtain Chemical Names

Written Hazard Communication Program

Recordkeeping

MSDS

Chemical List

Training

Written Hazard Communication Program

Begins

May 25, 1986 ← 1987
for construction

Need to add
right not to be
exposed with-
out MSDS for
N. C.

HAZARD COMMUNICATION (MSDS Explanation)

Page 1

This is an example of a reasonably good MSDS. As you can see, there is a lot on this document so we'll take it one section at a time.

Heading

There are three important items in the heading on this sheet. The company's name, the date of preparation, and phone numbers for additional information or emergency assistance.

Section I

This section lists the trade name, and general product classification. In this case there are several similar products covered by a single data sheet as they are all very similar mixtures that make up an epoxy paint. This MSDS only covers one part of a two part system; this is designated part A. If this were a single chemical, other names that the chemical is known by, would be listed.

Section II

As this is a mixture, ingredients that could pose a hazard to employees during use or foreseeable emergencies must be listed. The first column on the left is the CAS No., a unique number which will identify the specific chemical. The ingredient name should be as specific as possible and typically will be the official chemical name. It may be a general name for a well known mixture which are distilled fractions from crude oil.

The percent is the amount of that component in the mixture.

The TLV is an accepted exposure limit to which most people can be exposed for eight hours a day throughout a working lifetime without adverse effects. TLV's are based upon current knowledge and can change. The TLV may be expressed in parts per million (PPM), parts of contaminant vapor in a million parts of air, for example, one hundred cups of ethylbenzene vapor mixed in a million cups of air is the TLV of 100 ppm. Another unit used to express the TLV is mg/m³ or milligrams of contaminant in a cubic meter of air. This is simply a certain but very small weight of contaminant in the volume of air contained in a box that is just over 3'x3'x3'. The TLV is usually an average concentration for an entire workday and allows for some exposure above that level as long as there an equal amount and time below it to compensate.

There are materials which have a "C" before the TLV number. For these materials, that exposure level should not be exceeded. Some materials have an "S" after the TLV number. This means that skin contact is to be avoided with these materials.

The lower explosive limit or LEL is the lowest concentration of vapor in air that can be ignited at normal air pressure. This is similar to the leanest mixture that a car will run on.

The vapor pressure is the pressure of the vapors above the liquid at 20° Celcius or 68° Fahrenheit. The vapor pressure is an indication of how fast a material will evaporate. When a material boils, the vapor pressure is at or above 760 millimeters of mercury, normal air pressure at sea level. Vapor pressure increases as the temperature increases so materials evaporate faster at higher temperatures. These pressures are expressed in millimeters of mercury as in a mercury barometer.

Section III

The evaporation rate is simply a comparison to a common material, in this case diethyl ether which is the main ingredient in spray cans of engine starting fluid. The vapor density is listed to show whether the material could accumulate in a low spot if a substantial amount were evaporated. In this case it could. However, at normal temperatures this accumulation would not be significant because of the slow evaporation rate and the random movement of air molecules which would mix the solvent vapors into the air. Even at the lower explosive limit, the density of the air, vapor mixture is not significantly different from pure air.

The boiling point of a liquid is the temperature at which the vapor pressure reaches air pressure, 760 mm mercury. For a single chemical that temperature is the same until the liquid boils dry. For a mixture, the temperature changes. In this case, it is a mixture so the range of temperatures from start to the end of boiling is listed as the boiling range.

The percent volatile is the fraction of the mixture that will evaporate or turn to vapor. In this case it is listed as a percentage of the volume. It may also be listed as a percentage of the total weight.

The weight per gallon is an expression of the density. This is listed to show whether it will float on water or sink. In this case, it would sink as water has a density of 8.3 pounds per gallon. Density may also be expressed in grams per cubic centimeter. The density of water is 1.0 grams per cubic centimeter. Often the density of a material is divided by the density of water and expressed as a specific gravity. For example, the densities listed would yield specific gravities of 1.1 and 1.6 which show they both are heavier than water.

Section IV

Flammability classification is listed for compliance with shipping and storage regulations regarding how it may be stored in what type container in certain types of buildings. The flash point is a better indicator of concern for flammability and the flammability classification is based upon the flashpoint. The temperature at which a liquid or solid produces enough vapor to ignite with a spark in an enclosed area is the flash point. To illustrate this, let's compare gasoline and charcoal lighter fluid. The flash points are

-45°F. for gasoline and 104°F. for charcoal lighter. If gasoline is poured on something and a match tossed at it, there will be a loud noise and a fireball because of the substantial vapor coming off of the liquid. On the other hand, charcoal lighter usually must be heated with a flame before it will start on fire and burns slowly until it gets hot because too little vapor is generated at temperatures below 104°F.

The rest of the information in this section explains how to control or put out a fire of the material.

Page 2

Section V

This section lists the effects of overexposure to this material from acute, short term, and chronic, long term, exposure. Note that these effects are expected from exposure above the TLV. This information will usually explain what will happen if the materials gets in the eyes or on the skin, is inhaled or swallowed.

The first aid procedures explain how to respond to an overexposure. This information should be in terms that everyone can understand but sometimes the preparers use technical terms that only doctors and nurses understand. We will provide a definition for any term that you don't understand.

Section VI

This section tells what conditions or other materials can cause problems with this material. Some materials start on fire in air or explode on contact with water. Others will burn in a closed container under the wrong conditions. Others are sensitive to shock and could explode if dropped. This section tells what not to do. Fortunately, this material is pretty stable.

Section VII

This section tells how to approach spilled or leaked material and what to do with it when it is cleaned up. Most MSDS refer to federal or state rules or regulations on waste disposal. We have a waste disposal coordinator on each job that will know how to handle these regulations.

Section VIII

This section gives broad guidance about preventing overexposure and serious build up of flammable vapors. The term adequate ventilation usually means keep the vapor concentration below the TLV but, if employees are protected by a respirator, keep the vapor below 10% of the LEL so there won't be a flash fire. Proper ventilation will be designed during job planning. If there is a question about how good the ventilation is, the concentration of vapors can be measured for most materials and an explosimeter can check for the fraction of the lower explosive limit that is present.

Respirators are available for dusts, sprays, metal fume and various gases and vapors. If properly selected and fitted, these respirators provide

substantial protection from concentrations above the TLV. A respirator will usually be identified during job planning along with the ventilation requirements.

The general type of glove needed for protection will usually be specified. As most epoxy materials can cause an allergic skin rash similar to poison ivy, the manufacturer in reality specified rubber or plastic gloves but placed the burden of selecting the specific rubber or plastic on the glove supplier.

Means for protection of the eyes is also specified. This section could also include a recommendation for protective clothing, foot coverings, head coverings or face shields.

Note that the specific conditions of use will dictate what protective equipment is needed and that the equipment requirements may be more or less stringent than shown on the MSDS or container label.

Section IX

This section is the catch all for pertinent information that does not fit the other categories. Now that you know what is on the MSDS we will be covering materials you routinely encounter in future tool box meetings and during job assignment. You may review and copy the MSDS for any material that you may be exposed to.

B62 Series

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MATERIAL SAFETY DATA SHEET
FOR COATINGS, RESINS AND RELATED MATERIALS
(Approved by U.S. Department of Labor 'Essentially Similar' to form OSHA-20)

MANUFACTURER'S NAME

THE SHERWIN-WILLIAMS COMPANY
101 Prospect Avenue N.W.
Cleveland, Ohio 44115

EMERGENCY TELEPHONE NO.

(216) 566-2917

DATE OF PREPARATION

13-Aug-85

INFORMATION TELEPHONE NO.

(216) 566-2902

Section I -- PRODUCT IDENTIFICATION

PRODUCT NAME

* - Trade Mark

TILE-CLAD* II Enamel (Part A), Non-Lead Colors

PRODUCT NUMBERS AND COLORS

B62 B 11	Black	B62 W 101	Pure White
B62 N 71	Hi-Bild Primer	B62 W 102	Midtone Base
B62 T 104	Ultradeep Base	B62 W 103	Deeptone Base

--- Also BEAU MONDE* and Maintenance Colors ---

PRODUCT CLASS

Pigmented component for 2-package Epoxy Coating

Section II -- HAZARDOUS INGREDIENTS

CAS NO.	INGREDIENT	PERCENT	TLV-PPM	TLV-MG/M3	LEL	V.P.
100-41-4	Ethylbenzene	0-5	100.	435.	1.0	7.1
1330-20-7	Xylene.	10-25	100.	435.	1.0	5.9
64742-95-6	Light Aromatic Naphtha	0-25	100.	462.	0.7	3.8
111-76-2	2-Butoxyethanol	0-5	25.	120.	1.1	0.6

Section III -- PHYSICAL DATA

EVAPORATION RATE -- Slower than Ether	VAPOR DENSITY -- Heavier than Air
BOILING RANGE (F)	% VOLATILE VOLUME
222 - 448	50-60
	WT/GAL
	9.1-13.0

Section IV -- FIRE AND EXPLOSION HAZARD DATA

FLAMMABILITY CLASSIFICATION FLASH POINT 80-90 F PMCC LEL 0.7

RED LABEL -- Flammable, Flash below 100 F

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Foam

UNUSUAL FIRE AND EXPLOSION HAZARDS

Keep containers tightly closed. Isolate from heat, electrical equipment, sparks, and open flame. Closed containers may explode when exposed to extreme heat. Application to hot surfaces requires special precautions. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used. Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

Section V -- HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE -- See Section II

EFFECTS OF OVEREXPOSURE

ACUTE: In a confined area vapors in high concentration are anesthetic. Overexposure may result in lightheadedness and staggering gait.
Irritant to skin and upper respiratory system.

CHRONIC: Reports have associated repeated and prolonged overexposure to solvents with permanent brain and nervous system damage.

EMERGENCY AND FIRST AID PROCEDURES

If INHALED: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

If on SKIN: Wash affected area thoroughly with soap and water.
Remove contaminated clothing and launder before re-use.

If in EYES: Flush eyes with large amounts of water for 15 minutes.
Get medical attention.

Section VI -- REACTIVITY DATA

STABILITY -- Stable

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION -- Will Not Occur

Section VII -- SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Remove all sources of ignition. Ventilate and remove with inert absorbent.

WASTE DISPOSAL METHOD

Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State, and Local regulations regarding pollution.

Section VIII -- PROTECTION INFORMATION

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation. Avoid breathing vapor and spray mist. Avoid contact with skin and eyes. Wash hands after using.

Protect against dust which may be generated by sanding or abrading the dried film.

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section II is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear respiratory device approved by NIOSH/MSHA for protection against materials in Section II.

PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section II.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

Section IX -- PRECAUTIONS

DOL STORAGE CATEGORY -- 1C

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Contents are FLAMMABLE. Keep away from heat, sparks, and open flame.

During use and until all vapors are gone: Keep area ventilated - Do not smoke - Extinguish all flames, pilot lights, and heaters - Turn off stoves, electric tools and appliances, and any other sources of ignition.

Consult NFPA Code. Use approved Bonding and Grounding procedures.

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

OTHER PRECAUTIONS

This coating contains materials classified as nuisance particulates, for example titanium dioxide, calcium carbonate, etc. (see ACGIH TLV List, Preface and Appendix D), which may be present at hazardous levels only during sanding or abrading of the dried film.

This product must be mixed with other components before use. Before opening the packages, READ AND FOLLOW WARNING LABELS ON ALL COMPONENTS.

Intentional misuse by deliberately concentrating and inhaling the contents can be harmful or fatal.

HAZARD COMMUNICATION

Guidance for Supervision

Slide I

Hazard Communication is the term used by OSHA to describe informing employees of the potential hazards of materials on the job. Prior to the OSHA standard, these laws and regulations were based on an employees right-to-know about work place materials and thus were called right-to-know laws. Both hazard communication and right-to-know standards are in effect in some areas.

Slide II

The Federal OSHA Hazard Communication Standard is 29CFR1910.1200. It requires a hazard evaluation of each chemical or mixture of chemicals to be done by the manufacturer or importer of each chemical or mixture. The results of this evaluation will be placed on a document called a material safety data sheet or MSDS for short. The MSDS will enter into many steps in the hazard communication program so we'll show you details of it later.

An inventory must be performed to determine what materials are on each job site that could expose employees to hazardous or toxic concentrations during normal use or foreseeable emergencies.

An MSDS must be obtained from the supplier of each material on the inventory list. These material safety data sheets should be reviewed by corporate safety to be certain that the information on them is accurate and complete. Employees must be informed of their right to see and copy the inventory list and the MSDS for any material they may be exposed to. They must be informed where these items are kept and how to get to see them.

Shipping containers must be labeled by the manufacturer, importer or distributor with hazard warnings as indicated on the MSDS. These labels must be kept intact until the container is empty or replaced with an equivalent label. Secondary containers must be similarly labeled unless they are for the immediate use of the employee who dispenses the material from a labeled container.

Employees must be trained about this standard and potential hazards they may encounter in the workplace. We'll cover this in more detail later.

Records of the training, the inventory list and MSDS's must be kept for 30 years. At this time, the federal hazard communication standard does not apply to construction. However it eventually will in one form or another.

Slide III

Many states, cities, or counties have enacted right to know laws and states with OSHA plans have written their own right to know or hazard communication standards. The requirements for the workplace are usually similar to the federal requirements. They usually require a chemical inventory, the collection or preparation of MSDS's or Chemical Fact Sheets (CFS's), employee access, and training. They may also require that some agency such as the health department or fire department be sent a copy of the chemical inventory and all MSDS's or CFS's. Some laws allow an employee to refuse to work with a material and continue to be paid if an MSDS is not provided within a specified number of days.

Community right to know usually requires coordination of the facility emergency plan with the local emergency groups such as the fire department, ambulance service, police, and medical facilities. Many require a chemical inventory, MSDS's, and a map of the site, locating inventoried materials, be sent to the fire chief. These items must be updated as they change, annually or biennially depending on the specific law or regulation. Many of these laws require that MSDS's or CFS's be provided to the public.

These rules usually cover all employers. Where there is no state OSHA plan, the federal hazard communication standard preempts the state law and covers manufacturing but the local law covers construction as long as the Federal or State OSHA does not.

Some of these regulations are in effect already, some are imminent, while others are a ways off, for example, Maryland's is now in effect, California's goes into effect May 25, 1986, and North Carolina's is effective May 25, 1987 for the construction industry.

Slide IV

Most standards require employee training that includes a summary of the standard. We'll provide one that is specific to your location if you ask for it. Employees must be told where and how to access MSDS's and their right to copy MSDS's and the inventory list. They should be informed of the type of information on an MSDS and have the terms on an MSDS defined so that the information on the MSDS is useful to them. The hazards of materials which are routinely encountered must be covered so the employees know how to work with and respond to them. The procedures that will be used to inform employees about new or non-routine materials must also be covered. Typically, the MSDS, and possibly corporate safety, would be consulted during job planning such that procedures and equipment would be ready when the work was to start. Then the foreman would explain pertinent MSDS information, and the procedures and protective equipment to be used for the crew assigned to do the work. The warning labels on shipping containers and secondary labels or signs should also be pointed out to exposed employees as an additional means of communicating the hazards.

Slide V

Records to be kept are MSDS, chemical inventories, employee training and correspondence with state or local agencies involved in hazard communication. Employee training records could be kept on form 70-5, Foreman's Tool Box Meeting Report, on a modified work order form, or in a computer maintenance system such as CMMS. Note that records of hazard communication during work assignment must be made and kept. Most of your hazard communication will probably be done in this way and some record must be made of it. That record must include a summary of the information covered, the names of the employees trained and the person doing the training.

Slide VI

The federal standard requires manufacturing firms to provide MSDS's to contractors whose employees may be exposed to materials on the manufacturer's site. We, in turn, must provide them with MSDS's for materials we bring on site. Liability concerns and common sense dictate that we provide subcontractors with MSDS's to which their employees may be exposed and require them to provide MSDS's for materials they bring on site and to which others may be exposed.

HAZARD COMMUNICATION
OR
RIGHT-TO-KNOW

HAZARD COMMUNICATION
29 CFR1910.1200

- Hazard Evaluation
- Chemical Inventory
- MSDS
- Provide Employee Access
- Container Labeling
- Employee Training
- Recordkeeping
- Does Not Yet Apply To Construction

STATE RIGHT TO KNOW
Laws and Regulations

- WORKPLACE

- List Chemicals

- MSDS Or CFS

- Provide Employees Access

- Train Employees

- Send Chemicals List, MSDS To Agency

- Right Not To Be Exposed

← North
Carolina has
this.

- COMMUNITY

- Emergency Plan Coordination

- List & MSDS To Fire Chief

- Maps Of Facility To Fire Chief

- MSDS To Public

- Annual Or Binennal Updates

- Usually Cover All Employers

- Effective Dates Vary

EMPLOYEE TRAINING

Summary Of Applicable Standard

Employee Access To MSDS

Right To Copy MSDS & Chemical List

Type Of Information On MSDS

Define Technical Terms

Potential Hazards Routinely Encountered

How Non Routine Hazards Will Be Communicated

Job Planning

Work Assignment

Warning Labels

RECORDKEEPING

- MSDS & CHEMICAL LIST
- EMPLOYEE TRAINING
 - Tool Box Meetings
 - Job Assignment Communication
 - Work Orders
 - QMS
- Correspondence With State Or Local Government Agencies

OTHER COMPANIES

- CLIENTS

Give them MSDS For Construction Materials

Ask Them For MSDS On Process Materials

- SUBCONTRACTORS

Share MSDS

Our Materials

Process Materials

Their Materials

1910 Sunderland Place, N.W.
Washington, D.C. 20036
202-293-2980
Fax: 202-293-2915



Memorandum

December 7, 1989

To: ORC Asbestos Task Force

From: Rebecca L. Daiss

Subject: Concern over "Hazardous Exposures" to Asbestos
Resulting from Buffing Vinyl Floor Tiles!

For your information, as a result of an investigative report exposing the "hazards" associated with buffing asbestos containing vinyl floor tiles, OSHA is anticipating a possible swell of criticism and questions regarding the adequacy of the asbestos standard and possibly pressure to lower the action level and the PEL. The report was aired on WRC, a local D.C. news station and NBC affiliate. According to the report, samples taken by government industrial hygienists showed "hazardous levels" of asbestos during buffing operations.

The report made no reference to OSHA or to the levels established in the asbestos standard. The focus of the piece was not the workplace but schools and homes and the hazard to children was emphasized. We understand that the hazardous level referred to was the clearance level of .01 f/cc established in EPA's AHERA regulation and that the levels found were in the .05 to .08 f/cc range. Evidently, EPA has the data on which the report is based but has not made it available. EPA is putting together a fact sheet on the problem but does not plan to issue a press release at this point.

If you have any floor tile buffing exposure data, please send it to either OSHA or ORC. OSHA wants the data to establish a defense against the claims regarding the inadequacy of the standard that may arise during remand hearings. Although it has not been confirmed, knowledgeable persons who watched the report said that the buffers being used were a highly abrasive type that is prohibited by floor tile manufactures and not used in normal buffing operations. OSHA expects data on normal buffing operations to show levels well below .01 f/cc.

Merry Christmas!

BD3



**ORGANIZATION
RESOURCES
COUNSELORS, INC.**

510 SUNDERLAND PLACE NW • WASHINGTON DC 20036-1608 • TEL 202-293-2980
FAX 202-293-2915

Roger

August 27, 1996

MEMORANDUM

To: ORC Asbestos Task Force
ORC Occupational Safety and Health Group
ORC Western Occupational Safety and Health Group
ORC Occupational Safety and Health Physicians Group

From: Darrell K. Mattheis

Subject: Corrections To OSHA's Final Rule On Asbestos

On August 23, 1996 the Occupational Safety and Health Administration published in the *Federal Register* (61 FR, 43454) corrections to its final Asbestos Standard, issued August 10, 1994, (59 FR 40964) and also to corrections to the 1994 standard issued June 29, 1995 (60 FR 33974) and September 29, 1995 (60 FR 50411).

This present round of corrections, could more accurately be called "clarifications" because for the most part, they document in writing interpretations that the Agency has been making verbally since September 1995. The immediate genesis for this round of "corrections" came from agreements reached with organized labor when the unions agreed to drop challenges to OSHA's two rounds of 1995 "corrections".

The corrections fall into the following categories: Respirators, Signs and Labels, Training, Medical surveillance, One Waste-Bag Limitation for Class III Work and Class IV Work.

Respirators

OSHA lists the kinds of respirators that are acceptable for asbestos work. For exposures less than 10 times the PEL: half-mask air-purifying respirators with HEPA filters. For exposures up to 50 times the PEL, full-facepiece air-purifying respirators with HEPA filters. For up to 100 times the PEL, positive pressure respirators, either PAPRs with HEPA filters or full facepiece supplied air respirators. For exposures higher than 100 times the PEL, full facepiece, supplied air respirators.

In the process of making changes to its Asbestos standard, OSHA had neglected to explicitly require that employers inform employees required to wear respirators under the standard that

Medical Surveillance

OSHA requires that employees, who for a combined total of 30 or more days a year perform Class I, II, or III work or are exposed at or above the PEL or excursion limit, received medical surveillance. However, days in which an employee spends less than one hour performing Class II or III work, while fully conforming to required work practices may be excluded if:

- (1) The material being removed is intact,
- (2) The one hour period includes the entire time spent including cleanup.

One Waste-Bag Limitation for Class III Work

To qualify as Class III work, the amount of ACM that is removed must not be more than will fit into one standard-sized glove or waste bag. OSHA will consider material to be contained in one waste bag only if the glove bag or waste bag is not filled above the point where it can be effectively sealed and is not likely to inadvertently come open during normal handling. OSHA recommends that bags be filled only 1/3 to 1/2 full.

Class IV Work

Class IV activities consist of clean-up work that takes place in an area after a Class I, II, or III job has been completed. This means that some residual asbestos-containing dust may remain and therefore an asbestos trained "competent person" must evaluate the work before it is performed to assure that it has been properly classified. In addition, the employees performing Class IV work must receive training sufficient to allow them to recognize ACM, to understand its hazards, and to minimize the potential for asbestos exposure.

A copy of OSHA's August 23, 1996 correction document is attached.



DKM:cr

Attachment

c:\wpdoc\consulta\dkm\asbestos

Dated: August 18, 1996.

Stephen F. Sundlof,
Director, Center for Veterinary Medicine.
[FR Doc. 96-21529 Filed 8-22-96; 8:45 am]
BILLING CODE 4160-01-F

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

29 CFR Parts 1910, 1915, and 1926

[Docket number H-033-e]

RIN 1218-AB25

Occupational Exposure to Asbestos, Tremolite, Anthophyllite and Actinolite

AGENCY: Occupational Safety and Health Administration, Department of Labor.

ACTION: Final rule: corrections.

SUMMARY: The Occupational Safety and Health Administration (OSHA) is correcting certain provisions of the final asbestos standards issued August 10, 1994 (59 FR 40964) and corrected and clarified June 29, 1995 (60 FR 33974) and September 29, 1995 (60 FR 50411). **EFFECTIVE DATE:** These amendments take effect September 23, 1996.

FOR FURTHER INFORMATION CONTACT: Ms. Anne Cyr, Office of Information and Consumer Affairs, OSHA, U. S. Department of Labor, Room N3647, 200 Constitution Avenue, N.W., Washington, DC 20210; telephone: (202) 219-8151.

SUPPLEMENTARY INFORMATION:

1. Background

On August 10, 1994, OSHA issued asbestos standards for general industry, construction work, and shipyard work. 59 FR 40964. On June 29, 1995, and September 29, 1995, OSHA issued notices correcting and clarifying various provisions of those standards. 60 FR 33974; 60 FR 50411. This notice further corrects various provisions of the standards and clarifies the meaning of certain provisions of the standards.

The corrections set forth in this document are based on the existing rulemaking record and are not intended to affect the protection afforded by the standards in a significant way. OSHA therefore finds good cause, pursuant to 29 CFR 1911.15 and the Administrative Procedure Act, for promulgating the corrections without notice and opportunity for public comment.

This preamble will describe the changes to the regulatory text of the standards and will also clarify the meaning of certain existing provisions of the asbestos standards.

2. Respirators

The standards require that engineering and work practice controls be supplemented by respirator use when employees are exposed to asbestos fibers in concentrations exceeding the permissible exposure limit (PEL) and in certain other circumstances. The type of respirator that may be used depends on the amount by which exposures are expected to exceed the PEL. When exposures are less than 10 times the PEL, half-mask air-purifying respirators equipped with high efficiency filters may be used. Full-facepiece air-purifying respirators with high efficiency filters are permissible for exposures up to 50 times the PEL. Higher exposures require the use of positive pressure respirators, either powered air-purifying respirators (for exposures up to 100 times the PEL) or full facepiece supplied-air respirators (for even higher exposures).

Paragraph (h)(2)(iii) of the construction and shipyard standards provides that any employee who must wear a respirator under the standard may require that the employer provide him or her with a powered air-purifying respirator in lieu of a negative pressure respirator. Accordingly, even if the amount of asbestos to which an employee is exposed would permit that employee to be protected by a negative pressure respirator, an employee who wishes to wear a more effective respirator may require the employer to provide a powered air-purifying respirator.

It is important that employees understand that they have this choice. Accordingly, paragraph (h)(2)(iii) of the construction and shipyard standards is being revised to state explicitly that the employer must inform employees of their right to require provision of a powered air-purifying respirator in lieu of a negative pressure respirator. This requirement for employee notification is already implicit in provisions of the standards requiring that employees who perform work that is covered by a standard be trained in the contents of the standard. By stating explicitly that the employer must inform employees who are required to wear respirators that the employer may require the employer to provide a powered air-purifying respirator, the standards will better assure that employees receive the information they need to exercise the option afforded them by paragraph (h)(2)(iii).

3. Signs and Labels

The asbestos standards require that signs and labels be used to warn

employees of the presence of asbestos in buildings and vessels. When the 1994 standards were issued, certain provisions for signs and labels were carried over from earlier standards issued in 1986, and other provisions were added.

In resolving the judicial challenges to the 1986 standards, the court of appeals ordered OSHA to reconsider its determination not to require signs and labels to be in languages other than English. In response to the court's order, OSHA did not require that signs and labels be in languages other than English but did take other steps to assure that employees who were not fluent in English understood the warnings provided by the signs and labels. The agency added a new requirement that the training program specifically cover the contents of signs and labels and also required that the training assure that employees comprehend the warning signs. With these changes, OSHA concluded that the entire hazard communication program required by the standard "will ensure that all exposed employees are effectively warned of the presence and hazards of asbestos-containing material on worksites." 55 FR 3724, 3730 (Feb. 5, 1990).

The 1994 standards carried over the provisions requiring that employees be trained in the contents of signs and labels and that the training be conducted in a manner that the employee can comprehend. To further ensure that workers understand the warnings provided by signs and labels, the June 29, 1995 notice added a requirement to the construction and shipyard standards stating that the employer assure that the signs required at the entrance to regulated areas be comprehensible to employees. The regulated area sign provisions listed foreign languages, pictographs and graphics, as means to promote employee comprehension.

OSHA has determined that language stating the need to promote employee comprehension of signs and labels should be included in all of the sign and label requirements found in the asbestos standards. Accordingly, this notice revises paragraph (j)(3)(v) of the general industry standard, and paragraphs (k)(6) and (k)(8)(vii) of the construction and shipyard standards, to similarly state that employers must assure employee comprehension of the signs and labels. These revisions will provide for consistency in all of the provisions of the standards that require asbestos warning signs and labels and will therefore better assure that workers, particularly those who are not fluent in

5. Medical Surveillance

The 1994 construction and shipyard standards required medical surveillance "for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above the permissible exposure limit or excursion limit." The agency's intent was to count towards the medical surveillance requirement all of the days in which an employee performed either Class I or Class II or Class III work or, regardless of the type of work being done, was exposed over either the permissible exposure limit or excursion limit. The June 29, 1995 corrections notice modified this provision to require medical surveillance "for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above the permissible exposure limit or excursion limit for a combined 30 days or more per year." The addition of the second reference to 30 days or more per year was not intended to change the substantive meaning of the provision and has proven to be confusing. The provision is therefore being revised to return to the original wording.

The June 29, 1995 corrections notice also provided that days in which an employee spends less than one hour performing Class II or III work and, in doing so, fully conforms to the work practices specified in the standard, need not be counted towards the medical surveillance requirement. This provision is being further modified to state that such days are excluded only if the material being removed or disturbed is intact. Removal or disturbance of non-intact material presents the potential for considerable exposure to asbestos fibers, and any day in which such work takes place should count towards the medical surveillance requirement. The provision is also being clarified by stating that the one hour time period includes the time spent on the entire removal operation, including cleanup.

6. One Waste-Bag Limitation for Class III Work

Class III work includes maintenance work for which a small amount of ACM must be cut away to access mechanical or structural components of buildings. In order to qualify as Class III work (rather than Class I or Class II work), the amount cut away must be less than the amount that can be contained in a standard-sized glove bag or waste bag. Employers may not circumvent the requirements for Class I and Class II removals by overfilling a single glove

bag or waste bag and treating the job as Class III. Material is only considered to be "contained" if the glove bag or waste bag is filled to the point where it can be sealed effectively and will not become opened inadvertently or broken during normal handling. To facilitate secure closure and avoid breakage, it is generally proper practice to fill a bag only 1/3 to 1/2 full.

7. Class IV Work

As OSHA has explained previously, Class IV work must be related to and on the site of a construction job to be regulated by the Asbestos Construction Standard, 29 CFR 1926.1101. 60 FR 33974. This distinguishes such "clean-up" work from housekeeping which is regulated by the Asbestos General Industry Standard, 29 CFR 1910.1001.

OSHA further wishes to clarify that "clean-up" performed as a Class IV activity does not include picking up and bagging asbestos debris/dust during Class I, II, or III work. Class I, II, and III work is subject to the requirement in paragraph (g)(1)(iii) of the construction and shipyard standards for prompt clean-up and disposal of asbestos-containing waste and debris. Therefore, the collection and bagging of dust and debris that results from Class I, II, or III work is considered a part of that class of work and must be done by employees trained to do such work. Class IV activities consist of clean-up work that takes place in an area after a Class I, II, or III job in that area has been completed. Although any asbestos-containing dust and debris should have been removed during the Class I, II, or III job, OSHA recognizes that some residual asbestos-containing dust or debris may be present after the Class I, II, or III job (including cleanup) has been completed. The Class IV classification under the construction and shipyard standards for further cleanup work in areas where Class I, II, or III work has taken place means that an asbestos-trained "competent person" must evaluate the work before it is done to assure that it should not be classified under another category. The Class IV classification also means that the employees who perform the work must receive sufficient training to recognize the presence of ACM, understand the hazards associated with asbestos exposure, and know the appropriate work practices that must be followed to minimize the potential for asbestos exposure.

List of Subjects in 29 CFR Part 1910, 1915, and 1926

Asbestos, Occupational Safety and Health

This document was prepared under the direction of Joseph A. Dear, Assistant Secretary of Labor for Occupational Safety and Health, U.S. Department of Labor, 200 Constitution Avenue, N.W., Washington, DC 20210.

Accordingly, pursuant to sections 4, 6(b), (8)(c), and 8(g) of the Occupational Safety and Health Act of 1970 (29 U.S.C. 653, 655, 657); Sec. 107, Contract Work Hours and Safety Standard Act (Construction Safety Act, 40 U.S.C. 333); Sec. 41, Longshore and Harbor Workers' Compensation Act (33 U.S.C. 941); 5 U.S.C. Sec. 553; and 29 CFR Part 1911; 29 CFR Parts 1910, 1915 and 1926 are amended as set forth below.

Signed at Washington, DC, this 19th day of August, 1996.

Joseph A. Dear,

Assistant Secretary Occupational Safety and Health Administration.

OSHA hereby amends 29 CFR Parts 1910, 1915 and 1926 as follows:

PART 1910—OCCUPATIONAL SAFETY AND HEALTH STANDARDS

1. The authority citation of subpart Z, of 29 CFR part 1910 continues to read as follows:

Authority: Secs. 6, 8 Occupational Safety and Health Act, 29 U.S.C. 655, 657; Secretary of Labor's Order 12-71 (36 FR 8754), 9-78 (41 FR 25059), 9-83 (48 FR 35736) or 1-90 (55 FR 9033), as applicable; and 29 CFR part 1911.

All of subpart Z issued under section 6(b) of the Occupational Safety and Health Act, except those substances which have exposure limits listed in Tables Z-1, Z-2 and Z-3 of 29 CFR 1910.1000. The latter were issued under section 6(a) (29 U.S.C. 655(a)).

Section 1910.1000, Tables Z-1, Z-2 and Z-3 also issued under 5 U.S.C. 553. Section 1910.1000, Tables Z-1, Z-2 and Z-3 not issued under 29 CFR part 1911 except for the arsenic (organic compounds), benzene, and cotton dust listings.

Section 1910.1001 also issued under section 107 of Contract Work Hours and Safety Standards Act, 40 U.S.C. 333.

Section 1910.1002 not issued under 29 U.S.C. or 29 CFR part 1911; also issued under 5 U.S.C. 653.

Section 1910.1003 through 1910.1018 also issued under 29 CFR 653.

Section 1910.1025 also issued under 29 U.S.C. 653 and 5 U.S.C. 553.

Section 1910.1028 also issued under 29 U.S.C. 653.

Section 1910.1030 also issued under 29 U.S.C. 653.

Section 1910.1043 also issued under 5 U.S.C. 551 et seq.

Section 1910.1045 and 1910.1047 also issued under 29 U.S.C. 653.

(A) The employer shall institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above a permissible exposure limit. For purposes of this paragraph, any day in which a worker engages in Class II or Class III operations or a combination thereof on intact material for one hour or less (taking into account the entire time spent on the removal operation, including cleanup) and, while doing so, adheres fully to the work practices specified in this standard, shall not be counted.

PART 1926—(AMENDED)

1. The authority citation of subpart Z of 29 CFR part 1926 continues to read as follows:

Authority: Sections 6 and 8, Occupational Safety and Health Act, 29 U.S.C. 655, 657; Secretary of Labor's Orders Nos. 12-71 (36 FR 8754), 8-76 (41 FR 25059), 9-83 (48 FR 15736) or 1-90 (55 FR 9033) as applicable; and 29 CFR part 1911.

Section 1926.1102 not issued under 29 U.S.C. 655 or 29 CFR part 1911; also issued under 5 U.S.C. 653.

Section 1926.1103 through 1926.1118 also issued under 29 U.S.C. 6553.

Section 1926.1128 also issued under 29 U.S.C. 653.

Section 1926.1145 and 1926.1147 also issued under 29 U.S.C. 653.

Section 1926.1148 also issued under 29 U.S.C. 653.

2. In § 1926.1101, paragraph (h)(2)(iii) is revised to read as follows:

§ 1926.1101 Asbestos.

- (h) * * *
- (2) * * *

(iii)(A) The employer shall provide a tight fitting powered, air-purifying respirator in lieu of any negative-pressure respirator specified in Table 1 whenever:

(1) An employee chooses to use this type of respirator; and

(2) This respirator will provide adequate protection to the employee.

(B) The employer shall inform any employee required to wear a respirator under this paragraph that the employee may require the employer to provide a powered, air-purifying respirator in lieu of a negative pressure respirator.

Table 1 * * *

3. In § 1926.1101, paragraph (k)(6) is revised to read as follows:

- (k) * * *

(8) At the entrance to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain ACM and/or PACM, the building owner shall post signs which identify the material which is present, its location, and appropriate work practices which, if followed, will ensure that ACM and/or PACM will not be disturbed. The employer shall ensure, to the extent feasible, that employees who come in contact with these signs can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, pictographs, graphics, and awareness training.

4. In § 1926.1101, paragraph (k)(8)(vii) is revised to read as follows:

- (k) * * *
- (8) * * *

(vii) When a building owner or employer identifies previously installed PACM and/or ACM, labels or signs shall be affixed or posted so that employees will be notified of what materials contain PACM and/or ACM. The employer shall attach such labels in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical room/areas. Signs required by paragraph (k)(6) of this section may be posted in lieu of labels so long as they contain information required for labeling. The employer shall ensure, to the extent feasible, that employees who come in contact with these signs or labels can comprehend them. Means to ensure employee comprehension may include the use of foreign languages, pictographs, graphics, and awareness training.

5. In § 1926.1101, paragraphs (k)(9)(iii), (k)(9)(iv), and (k)(9)(v) are revised to read as follows:

- (k) * * *
- (9) * * *

(iii) Training for Class I operations and for Class II operations that require the use of critical barriers (or equivalent isolation methods) and/or negative pressure enclosures under this section shall be the equivalent in curriculum, training method and length to the EPA Model Accreditation Plan (MAP) asbestos abatement workers training (40 CFR Part 763, subpart E, appendix C).

(iv) Training for other Class II work.

(A) For work with asbestos containing roofing materials, flooring materials, siding materials, ceiling tiles, or transite panels, training shall include at a minimum all the elements included in

paragraph (k)(9)(viii) of this section and in addition, the specific work practices and engineering controls set forth in paragraph (g) of this section which specifically relate to that category. Such course shall include "hands-on" training and shall take at least 8 hours.

(B) An employee who works with more than one of the categories of material specified in paragraph (k)(9)(iv)(A) of this section shall receive training in the work practices applicable to each category of material that the employee removes and each removal method that the employee uses.

(C) For Class II operations not involving the categories of material specified in paragraph (k)(9)(iv)(A) of this section, training shall be provided which shall include at a minimum all the elements included in paragraph (k)(9)(viii) of this section and in addition, the specific work practices and engineering controls set forth in paragraph (g) of this section which specifically relate to the category of material being removed, and shall include "hands-on" training in the work practices applicable to each category of material that the employee removes and each removal method that the employee uses.

(v) Training for Class III employees shall be consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2). Such a course shall also include "hands-on" training and shall take at least 16 hours. Exception: For Class III operations for which the competent person determines that the EPA curriculum does not adequately cover the training needed to perform that activity, training shall include as a minimum all the elements included in paragraph (k)(9)(viii) of this section and in addition, the specific work practices and engineering controls set forth in paragraph (g) of this section which specifically relate to that activity, and shall include "hands-on" training in the work practices applicable to each category of material that the employee disturbs.

6. In § 1926.1101, paragraph (m)(1)(i)(A) is revised to read as follows:

- (m) * * *
- (1) * * *
- (i) * * *

(A) The employer shall institute a medical surveillance program for all employees who for a combined total of 30 or more days per year are engaged in Class I, II and III work or are exposed at or above a permissible exposure limit

POST: 3/IEB/86 (1400)

WGHC
243

REMOVE: 4/III/86

Cape Fear Site
Wilmington, North Carolina
March 18, 1986

EMPLOYEE BULLETIN NO. 15

REFRACTORY CERAMIC FIBERS (RCFs) AND FIBER REINFORCED INSULATION

POTENTIAL CARCINOGENIC EFFECTS

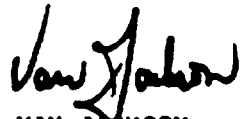
Haskell Laboratory and Corporate Medical Division have completed an evaluation of recent studies that showed that laboratory animals developed cancer after exposure to high doses of a particular asbestos substitute material, aluminum silicate refractory ceramic fibers. They conclude that this material can cause cancer in laboratory animals but that there is no significant hazard to persons exposed at the recently set Acceptable Exposure Limit (AEL) of 0.5 respirable fibers/cc and using procedures to minimize airborne fiber generation.

Because some other RCF(s) have shown similar effects in animal tests, the following points are made:

- Cape Fear originally installed asbestos insulation in our Fibers and PD operations. Approximately 20% of this insulation has been replaced with non-asbestos insulation, primarily fiberglass and calcium silicate.
- RCF(s) are commonly found as asbestos substitutes in high temperature application.
- All RCF(s) should be handled in the same manner as respirable aluminum silicate unless specific data indicates otherwise.
- Companies of the Thermal Insulation Manufacturers Association (TIMA) making these fibers have shown no occupationally-related effects in over 25 years of experience.
- Following safe work practices, engineering controls and protective equipment recommendations which minimize airborne fibers ensures that exposure levels will be maintained below Haskell's recommended limit.
- Airborne RCF(s) concentration maintained below the AEL plus the appropriate use of personal protective equipment to minimize exposure provides the necessary protection from any fiber hazards.

A survey of our non-asbestos insulation is being conducted to determine if RCF is present. Until this survey is complete and new procedures are developed, we will use the handling and disposal procedures described in Item 703 of the Cape Fear Safety Manual for all insulation, except fiberglass and foam.

If you have questions, please discuss this with your supervisor.


VAN JACKSON
PERSONNEL SUPERVISOR

JVJ/MJJ/bp

Cape Fear Site
Wilmington, North Carolina
March 18, 1986

SUPERVISORY INFORMATION BULLETIN

REFRACTORY CERAMIC FIBERS (RCFs) AND FIBER REINFORCED INSULATION

POTENTIAL CARCINOGENIC EFFECTS

DEFINITION OF SCOPE

1. Q. What are Refractory Ceramic Fibers (RCFs)?
 - A. Refractory Ceramic Fibers (RCFs) are man-made amorphous and polycrystalline fibers which are generally used in many high temperature non-asbestos containing insulation formulations.
2. Q. What are some other uses?
 - A. They are used as asbestos substitutes in high temperature (>1000°F) insulation applications and removable blanket insulation. They may also be present in other non-asbestos formulations as reinforcing fibers. RCF(s) are manufactured in the form of loose wool which can be used as reinforcing fibers. The fibers may also be needled into flexible blankets, felts, rope, textiles, papers; formed with flexible or rigid binders into many shapes or formulated for spray applications.
3. Q. Should RCF(s) in good condition be removed? Is there a ban on its installation?
 - A. No. RCF(s) in good condition should be left in place. RCF(s) may be safely installed or removed by complying with the AEL and following the engineering control practices, work practices and protective equipment designed to minimize airborne fibers.
4. Q. Should we continue to replace asbestos with RCF(s)?
 - A. Yes. RCF(s) are appropriate substitutes for many high temperature (>1000°F) applications and can be safely handled following the recommendations which prevent or minimize the generation of airborne fibers. For low temperature applications, fiberglass is a safe choice not associated with lung cancer or other chronic health effects.
5. Q. What about fiberglass?
 - A. Glass fibers have been studied in several animal inhalation tests and worker epidemiological studies. The results so far have been negative. Fiberglass has not been associated with pulmonary fibrosis, lung damage or lung cancer.

6. Q. What about mineral wool?

A. A preliminary review of data available on mineral wool does not indicate an equal concern. Haskell will be reviewing it in more detail. In the interim, sites should follow manufacturer's guidelines on handling mineral wool, which include an exposure guideline for respirable particles of 5 mg/m³ as an 8-hour TWA.

7. Q. When did information on aluminum silicate RCF(s) first become available?

A. One of our plants received information from a supplier in late September, 1985. Haskell Laboratory and Corporate Medical Division then evaluated these studies and completed the Hazard Determination.

ANIMAL TESTING/EPIDEMIOLOGY

8. Q. What do the animal studies show so far? Was there a no-effect level found for RCF(s)?

A. Rats showed abdominal and thoracic mesothelioma tumors when injected into the abdomen [intraperitoneally (IP)] with aluminum silicate RCF(s). Previous inhalation studies with rats showed fibrosis and lung cancers. Preliminary results from on-going long-term studies with rats and hamsters have shown one hamster mesothelioma on inhalation and a high rate of mesothelioma upon IP injection of the rats. These studies were designed at high exposure as screening studies to check for toxic responses, and were not designed to determine a no-effect level.

9. Q. At what levels were the inhalation studies conducted?

A. The studies were run at concentrations of 95-200 fibers/cc.

10. Q. Are RCF(s) as bad as asbestos?

A. To date, RCF(s) have not been shown to cause cancer in humans or to cause other adverse health effects in workers, while asbestos has. However, because of the animal test results to date, it is prudent to handle RCF(s) in a way that minimizes fiber generation.

HANDLING RECOMMENDATIONS

11. Q. In summary, what are the controls and work practices recommended for use with all RCF(s)?

A. Common sense work practices designed to minimize generation and exposure to fibers and controls to comply with the recently set Du Pont AEL of 0.5 respirable fibers/cc are recommended. Engineering controls, wherever feasible, and respiratory protection if needed to meet the AEL. Because of its unpredictability, respirators should always be worn during removal operations.

HANDLING RECOMMENDATIONS (Cont.)

The following controls and work practices will minimize exposure to fibers:

- Respiratory protective equipment for all workers in the area during removal operations.
- Respiratory protection in operations where the AEL may be exceeded (e.g. sawing, drilling, sanding, etc.) until characterization of the job by monitoring confirms compliance with the AEL. .
- Engineering controls where technically feasible such as isolation, enclosure, exhaust ventilation, and dust collection wherever necessary to comply with the AEL. Mechanical dust collection systems whenever sawing or sanding.
- Work practices to minimize fiber generation such as only handling materials insofar as practical in a wet state sufficient to prevent the emission of airborne fibers.
- Wear eye protection: goggles whenever fibers or particulates may get into the eyes.
- Loose fitting long-sleeved clothing to prevent skin irritation.
- Launder non-disposable clothing contaminated with fibers separately from other clothing. Rinse washing machine thoroughly after use.
- Wash fibers off skin with soap and warm water to minimize skin irritation. Do not rub or scratch.
- Housekeeping: avoid unnecessary rehandling of scrap RCF(s) materials. Keep waste disposal equipment as close to work areas as possible. Follow an organized housekeeping program at all times. Clean up dust with high efficiency particulate air (HEPA) filtered vacuum equipment.
- Waste material properly labelled and disposed in an "asbestos" landfill.

12. Q. Previous plant procedures did not require respiratory protection for non-asbestos insulation. Do previous exposures to non-asbestos insulation mean we are at risk of developing adverse health effects?

A. There has been no known occupationally-related health effects in employees who work for member companies of the Thermal Insulation Manufacturers Association (TIMA) manufacturing RCF(s) for 25 to 30 years. However, because of the animal carcinogenic studies results, it is prudent to use protective equipment, engineering controls and work practices to minimize any potential exposure.

MEDICAL SURVEILLANCE

13. Q. Should RCF(s) insulation application and removal workers and pensioners be included in a special medical program?

A. Yes. An annual chest x-ray and pulmonary function tests will be offered to these workers. Since the asbestos program began, all x-rays from Du Pont physicals have been read by Board Certified Radiologists and any questionable results referred to pulmonary specialists for diagnosis. Any referral cases should be reviewed to determine whether there may have been exposure to RCF(s) or other fiber insulation besides asbestos and Corporate Medical notified. Pensioners are already included in the asbestos medical program.

LABELLING/DISPOSAL

14. Q. How should RCF(s) waste be labelled for disposal?

A. The recommended label would be:

REFRACTORY CERAMIC FIBERS CONTAINING WASTE

POSSIBLE CANCER HAZARD BASED ON TESTS WITH LABORATORY ANIMALS

Overexposure may create risk of fibrosis, lung cancer and mesothelioma.
Do not breathe dust.

Use approved respiratory protection when handling.

For spills: scoop up, then vacuum dust with a high efficiency
particulate air filtered cleaner. Place in plastic bags and dispose of
in an approved landfill.

E. I. DU PONT DE NEMOURS & COMPANY
CAPE FEAR SITE
WILMINGTON, NORTH CAROLINA 28402

AIR MONITORING

15. Q. Should personnel and area air monitoring for RCF(s) be conducted?

A. Yes, to ensure the effectiveness of the control methods. In addition,
as part of the future Hazard Assessment update air monitoring data on
RCF(s) installation, handling, and removal tasks will help determine
what potential exists to generate friable fibers during these
operations.

16. Q. How should RCF(s) air samples be collected and analyzed?

A. Samples should be collected following NIOSH procedures P&CAM 239 & 7400
and sent to Haskell Laboratory or another AIHA accredited laboratory
for asbestos fiber counting. The sample should be marked as containing
RCF(s) and any other fiber known to be present.

17. Q. Are RCF(s) specifically regulated by OSHA or EPA like asbestos is?

A. No. To date, RCF(s) are not specifically regulated by any state or
federal government regulation. They are covered by OSHA's Hazard
Communication Standard, which requires employers to inform employees
about all hazardous materials present in the workplace. Since Sohio
Carborundum's notification to EPA under the Toxic Substances Control
Act, Section 8 (e) of potential substantial risk to health from
aluminum silicate refractory ceramic fibers, EPA is evaluating them to
determine whether they need to be regulated along with a wide range of
other fibrous minerals similar to asbestos.

JVJ/MJJ/bp