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Prstd Std  
US Postage  
**PAID**  
Permit No. 28  
Nia. Falls, NY

## **Workplace Quality News Information Guide**

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- Understanding Fiber Carcinogen Classification Systems

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**Anyone interested in Issues 1-17, call the PSP Hotline at 1-800-322-2293**



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# Workplace Quality News



Number 22, August 2005

## Airborne Fiber Sampling is Key to Product Stewardship

By Patrick Snodgrass, CSP, Sr. Health and Safety Specialist

Unifrax has always been proactive when it comes to the health and safety issues associated with refractory ceramic fiber (RCF) by promoting the Unifrax Product Stewardship Program. This program builds its success from airborne fiber sampling not only at Unifrax facilities, but at customer facilities as well. This complementary service provides customers with sampling results, which will in turn help them make decisions on either controlling or reducing airborne RCF. Workplace airborne fiber sampling is one of seven key elements that comprise the product stewardship program. The other elements include: communications, special studies, product research, evaluation of workplace controls, exposure assessments and health effects research.

The product stewardship program is promoted by the three leading North American manufacturers of RCF: Unifrax, Thermal Ceramics and Vesuvius, which comprise the Refractory Ceramic Fibers Coalition (RCFC). These companies work together with support from the United States Occupational Safety and Health Administration (OSHA) to assist end users of RCF on the proper management of this fiber. As part of an agreement with the RCFC and OSHA, Unifrax actively pursues airborne fiber sampling and collects over one hundred samples at customer facilities each year.

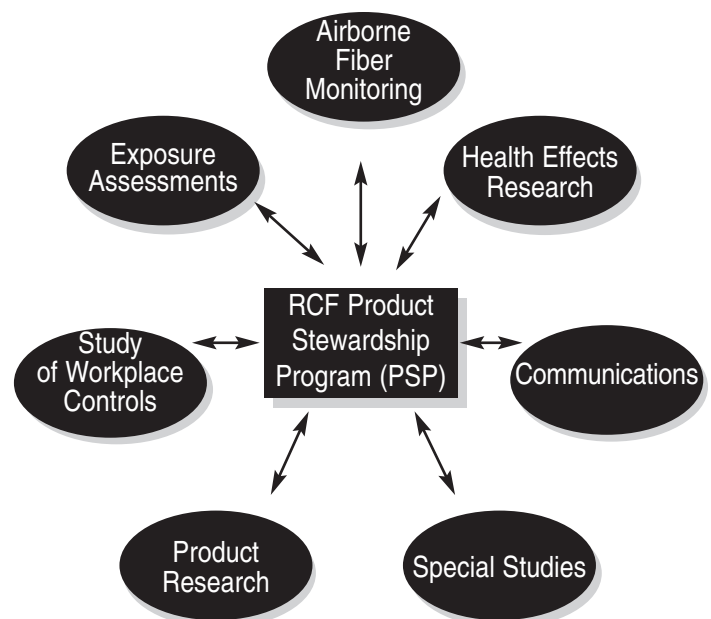
Unifrax has a staff of qualified industrial hygienists who specialize in airborne fiber sampling and engineering control evaluation. These hygienists have traveled throughout North America sampling and assisting users of RCF with engineering and administrative controls for reducing airborne RCF.

Sampling at customer facilities typically involves employees who are engaged in full-shift, workplace exposure to ceramic fiber. These jobs can be found in automotive catalytic converter applications, vacuum-forming operations, assembly of products with RCF and finishing RCF-containing products by either cutting, sanding or drilling. However, sampling is also conducted on employees involved in short-term exposure jobs when installing or removing RCF used in furnacing applications. Many samples are also collected for tasks

that may have passive RCF exposure such as maintenance, material handlers and fork truck operators.

Once sampling has been conducted at a facility, the hygienist will submit the samples to an independent laboratory for analysis. Upon completion of the analysis, a report will be generated and sent to the customer, which will outline sample results and any recommendations on respirator use or engineering controls to reduce RCF exposure. Unifrax has also developed a self-monitoring program designed to assist customers in conducting their own industrial hygiene airborne fiber monitoring.

If you are interested in learning more about the Unifrax Product Stewardship Program or would like to request a visit for airborne fiber sampling, please contact an industrial hygienist at 1-800-322-2293.



# Understanding Fiber Carcinogen Classification Systems

By Russ Person, Risk Management Specialist and Julie Mayer, Health and Safety Engineer

There are a number of scientific organizations and regulatory agencies that have developed systems for the identification and classification of carcinogenic materials. Mineral fibers and synthetic vitreous fibers have been the subject of reviews under many of these carcinogen classification systems. It is important to understand that while some substances (such as asbestos), are proven human carcinogens, evidence of human carcinogenicity is lacking in many of the substances evaluated. Often, in the absence of human data, researchers only have the results of animal testing on which to base their decisions. It is also important to understand that carcinogen classifications are based solely on hazard evaluations. In many cases, there may be little to no risk of producing cancer under normal usage conditions.

**TABLE 1: FIBER CARCINOGEN CLASSIFICATION SYSTEMS**

	IARC	NTP	ACGIH	EPA	Cal.	EU
<b>ASBESTOS</b>	1 (1987)	“Known”	A1	A	“known”	Cat. 1
<b>MINERAL WOOL (rock / slag)</b>	3 (2001) 2B (1987)	Not Classified	A3 (rock wool)	None	Not listed	Cat. 3
<b>FIBERGLASS</b>	3 (2001) 2B (1987)	“Reasonably Anticipated”	A3	None	“known”	Cat. 3
<b>SPECIAL PURPOSE GLASS (E-GLASS, 475)</b>	2B (2001)	Not Classified	A3	None	“known”	Cat. 2
<b>SAFFIL</b>	2B (1987)	“Reasonably Anticipated”	None	None	“known”	Not Classified
<b>RCF</b>	2B (2001) 2B (1987)	“Reasonably Anticipated”	A2	B2	“known”	Cat. 2

## IARC (INTERNATIONAL AGENCY FOR RESEARCH ON CANCER) <http://www.iarc.fr>

Group 3: not classifiable as to carcinogenicity to humans, based on inadequate evidence of carcinogenicity in humans and inadequate or limited evidence in experimental animals

Group 2B: possibly carcinogenic to humans, based on inadequate evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals

Group 1: carcinogenic to humans

## NTP (NATIONAL TOXICOLOGY PROGRAM) <http://ntp-server.niehs.nih.gov/>

“Reasonably anticipated to be a human carcinogen” includes those substances in which there is sufficient evidence of carcinogenicity from studies in experimental animals. “Known to be a human carcinogen” includes substances for which there is sufficient evidence of carcinogenicity from studies in humans that indicates a causal relationship between exposure to the agent, substance, or mixture and human cancer.

## ACGIH (AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS) <http://www.acgih.org>

Group A3: confirmed animal carcinogen with unknown relevance to humans

Group A2: suspected human carcinogen, based on limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals with relevance to humans

Group A1: confirmed human carcinogen

## EPA (ENVIRONMENTAL PROTECTION AGENCY) <http://www.epa.gov>

Group B2: Probable human carcinogen, based on sufficient evidence of carcinogenicity in animals

Group A: Carcinogenic to humans

## CALIFORNIA PROPOSITION 65 <http://www.oehha.ca.gov/prop65.html>

“known to the state of California to cause cancer” — IARC “possibly carcinogenic” listing used as a criterion for inclusion.

## EUROPEAN UNION <http://europa.eu.int/eur-lex/lex/en/index.htm>

Category 3: substances which cause concern for humans owing to possible carcinogenic effects, but in respect of which the available information is not adequate for making a satisfactory assessment. Commission Directive 97/69/EC contains two notes (Notes Q and R) which allow for exemption from category 3.

Category 2: substances which should be regarded as if they were carcinogenic to humans

Category 1: substances known to be carcinogenic to humans

**TABLE 2:  
IARC GROUP 1 SUBSTANCES**

<b>CHEMICAL</b>	<b>WHERE FOUND/COMMON USES</b>	<b>COMMON NAMES</b>
Arsenic	Pressure Treated Wood	
Benzene	Gasoline, Tobacco Smoke, Pesticides	
Ethylene Oxide	Production of Ethylene Glycol (Substance Found in Antifreeze)	
Formaldehyde	Cosmetics, Antiseptics, Food Preservatives, Used in the Manufacture of Phenolic Resin	Methylene Oxide, Methanal, Oxymethylene, Methylaldehyde, Oxomethane
Nickel Compounds	Jewelry, Coins, Stainless Steel	
Silica	Beach Sand, Brick Making, Sandblasting, Enameling, Quarrying and Cutting of Rock	Crystalline Silica
Vinyl Chloride	PVC, Pipes, Wire Coatings, Packaging Materials	Chloroethene, Chloroethylene, Ethylene Mono-chloride

**TABLE 3:  
IARC GROUP 2B SUBSTANCES**

<b>CHEMICAL</b>	<b>WHERE FOUND/COMMON USES</b>	<b>COMMON NAMES</b>
Carbon Black	Rubber, Pigment, Paints, Inks, Natural Gas	
Dichloromethane	Solvents, Paint Removers, Degreasers, Aerosol Products	Methylene Chloride
Ethylbenzene	Inks, Paints, Insecticides, Rubber and Plastic Production, Gasoline Production	
Lead	Batteries, Ammunition, Metal Products, Solder and Pipes, Devices to Shield X-Rays	
Magnetic Fields	Power Lines (Extremely Low Frequency)	
Napthalene	Moth Balls, Tobacco Smoke, Creosote Treatment in Wood	White Tar, Tar Camphor
Nickel, Metallic	Dentistry	
Styrene	Food Containers, Rubber, Plastic, Fiberglass, Pipes	Polystyrene
Tetrafluoroethylene	Coating on Cookware, Stain Repellant	Teflon®
Vinyl Acetate	Glues for Packaging and Building Industries, Paint, Textiles, Paper, Food Packaging, Modifier of Food Starch	
Carrageenan	Food Stabilizer, Cosmetic industry	Irish Moss, Red-Seaweed