MATERIAL SAFETY DATA SHEET

FOR

Coal Fly Ash

May be used to comply with OSHA's Hazard Communication Standard 29 CFR 1910.1200. Standard must be consulted for specific requirements

ProAsh©

Quality and Reliability through Processing

Date Prepared: March 22, 1999

SECTION I GENERAL INFORMATION

Subject: Bituminous Coal Fly Ash

Manufacturer:

Baltimore Gas and Electric
STI Processed Ash LLC.

Telephone Number for Information:
781-455-6600

SECTION II HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Mineral Analysis of Ash	CAS Number	Wt. % Ignited Basis	OSHA PEL (mg/m^3)
Silica (SiO_2)	60676-86-0	40-70%	0.1
Crystalline Silica	14808-60-7	1-3%	0.1
Alumina (Al_2O_3)	1344-28-1	20-35%	15
Ferric Oxide (Fe_2O_3)	1309-37-1	5-15%	10
Potassium Oxide (K_2O)		1.6-2%	–
Titanium Oxide (TiO_2)	13463-67-7	1.2-1.5%	15
Lime (CaO)	1305-78-8	0.8 - 1.4%	5
Magnesia (MgO)	1309-48-4	0.1 - 0.7%	15
Sodium Oxide (NaO)	12401-86-4	0.1 - 0.5%	–
Sulfur Trioxide (SO_3)	7446-11-9	0.1 - 0.3%	–

Trace Metals	CAS Number	Concentration (mg/kg)	OSHA PEL (mg/m3)
Arsenic (As)	7440-38-2	1 - 25	0.01

Note: Concentrations are approximate and may vary with coal source and boiler operating conditions. The International Agency for Research on Cancer (IARC) has classified Crystalline Silica as a probable human carcinogen and Inorganic Arsenic as a human carcinogen.

SECTION III PHYSICAL AND CHEMICAL CHARACTERISTICS

Appearance and Odor: Fine grained, gray powder. No Odor.

Boiling Point:	N/A	**Evaporation Rate:**	N/A
Vapor Pressure:	N/A	**Melting Point:**	N/A
Vapor Density:	N/A	**Solubility in water:**	Insoluble
Specific Gravity:	2.0 to 3.0		

(ASTM D854)

Note: N/A means "not applicable"

SECTION IV FIRE AND EXPLOSION HAZARD DATA

Flammability Limits: N/A

Fire and Explosion Hazard: None

Fire Fighting Procedures: Coal ash is the final product of combustion: therefore, unusual hazards are not expected in a fire.

Flash Point: N/A

SECTION V REACTIVITY DATA

Stability: Stable, will not polymerize.

Stable under normal conditions of storage and handling.

Conditions to avoid: None

Incompatibility: None

Hazardous Decomposition or By-Products: None Reported

SECTION VI HEALTH HAZARD INFORMATION

Exposure Route:

- Inhalation
- Skin Contact
- Eye Contact

Ingestion: No information on the short term effects from ingestion in humans available. No observed effects in mice that ingest up to 1 % coal fly ash in drinking water (Roy et. al. 1981).

Mutations: No information on mutagenicity in humans was found.

Birth Defects and Effects on Reproduction: No information on reproductive effects in humans was found.

Other Health Effects: Inhaled crystalline silica may cause pulmonary damage, resulting in silicosis. Silicosis is defined as a degenerative fibrotic lung disease. It has been determined that the pulmonary defense system of mice was significantly affected by coal fly ash (Aranyl and Bradof, 1981).

SECTION VII HEALTH HAZARD INFORMATION (continued)

Note: The International Agency for Research on Cancer (IARC) has classified crystalline silica as a probable human carcinogen.

Medical Conditions: No information was reported on medical conditions that may be aggravated by exposure to coal fly ash. However, emphysema and bronchitis frequently occur in cases of silicosis (Merchant et al. 1981)

Emergency and First Aid Procedures:

Inhalation: Move person to fresh air. Clear nasal passage and discourage affected individual from sniffing. If person is not breathing, contact emergency medical services and initiate basic life support.

Skin: Brush away ash particles. To avoid possible irritation, wash contaminated skin immediately with soap and water. Remove any contaminated clothing and rewash skin if necessary. If skin irritation results, obtain medical attention.

Eyes: Immediately flush the eyes for at least 15 minutes at an eyewash station. Use an appropriate flush solution or water while holding the eyelids open. Do not rub. Seek medical attention as soon as possible.

SECTION VIII PRECAUTIONS FOR SAFE HANDLING AND USE

Personal Protection: Employees handling fly ash should wear gloves, goggles, NIOSH respiratory protection and disposable coverlets.

Storage and Handling: When storing coal fly ash in ash ponds, treat surface to avoid wind erosion of ash particles. When storing coal fly ash in landfills, the ash should be wetted and covered to avoid wind erosion of ash particles. Open trucks utilized in ash disposal should be properly covered and should be wetted.

Special Precautions and Control Measures: Employees handling fly ash should observe proper personal hygiene, wash hands, remove coverlets before eating, smoking, applying cosmetics or using toilet facilities. Local exhaust systems should be used whenever possible. Other practices such as wetting should be utilized to control dust. Compressed air should not be used.

SECTION IX SPILL OR LEAK PROCEDURES

Spills/Releases: Fly ash should be placed in suitable containers and covered. Fly ash should be wetted where practical to control dust.

Fly ash is not considered a hazardous waste under EPA's Resource Conservation and Recovery Act (RCRA). Coal fly ash may be disposed of by adding to cement mixtures, asphalt additives, and as agricultural soil modifiers (Roy et al. 1981).

References

Aranyl, C. and J. Bradof. 1981. Effect of Conventional and Advanced Coal Conversion By-Products on the Pulmonary System. EPA 600/1-81-038. April.

IARC. 1987. IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. International Agency for Research on Cancer. Vol. 42. Lyon, France.

Merchant, J.A., B.A. Boehlecke, G. Taylor (eds.) 1986. Occupational Respiratory Diseases. U.S. Department of Health and Human Services. National Institute for Occupational Safety and Health. Publication No. 86-102.

Morris, S.C. and L.D. Hamilton. 1984. Health and Environmental Effects of Coal-Fired Electric Power Plants. Prepared for the International Congress on Environmental Impacts on Coal Fired Power Plants, Brindisi, Italy. p. 42.

Occupational Safety and Health Administration 1995/1996. Air Contaminants - Permissible Exposure Limits. Title 29 Code of Federal Regulations 1910.1000. U.S. Department of Labor. Occupational Safety and Health Administration.

Raabe, O.G., W.S. Tyler, J.A. Last, et al. 1982. Studies of the Chronic Inhalation of Coal Fly Ash by Rats. Ann. Occup. Hyg. 26(1-4): 189-211.

Roy, W.R., R.G. Thiery, R.M. Schuller, J.J. Suloway. 1981. Coal Fly Ash: A Review of the Literature and Proposed Classification System with Emphasis on Environmental Impacts. Environmental Geology Notes 96. Illinois State Geological Survey. 69 p.

Wel, C.I., M.R. Culbertson, M. Shifrine, L.S. Rosenblatt, C.E. Chrisp. 1982. Comparative Studie on *In Vivo* Carcinogenesis in Rats and *In Vivo* Mutagenesis of Mutagenic Coal Fly Ash. J. of Toxicology and Environ. Health, 10: 587-600.