

Doug + Ellen Cameron
250 H. St. Box 823
Blaine, WA 98230
360-656-6545

Greetings Friends and neighbors:

My name is Doug Cameron. My wife Ellen and I live in Birch Bay. We have done a lot of research on SSA Marine's scheme to build a coal terminal in our backyard. We wish to inform you of some of the key facts we have garnered in the past two years of research. Both my wife and I are retired construction electricians and speak with some authority on workplace safety issues.

In earlier times of construction, too many people were hurt or killed in the construction industry. Our government saw the need for some oversight and enacted a safety program called OSHA, the Occupational, Safety and Health Act. In the two years preceding OSHA's enactment, 14,000 workers died each year from workplace hazards and another two million were disabled or harmed. The chemical revolution following WWII introduced a vast array of new chemical compounds to the manufacturing environment. The health effects of these chemicals were poorly understood and workers received few protections against prolonged or high levels of exposure. The Federal Government finally decided something must be done to protect workers so on April 28, 1970, OSHA was born.

Now the coal industry would like you to believe that their so called "clean coal" is perfectly safe in the environment, nothing could be further from the truth. I have here the latest OSHA report on the effects of coal dust on humans. Have ever read an OSHA Report? Well this report applies to coal dust in the workplace. Other trades get OSHA reports that apply to their respective trades such as the electrical industry, etc.

Our government EPA considers coal dust as a hazardous substance and has issued this OSHA warning. You can go on-line and print this out for yourself, go to OSHA report on coal dust. After examining this document, you should consider if you want coal dust near your homes, your workplace, your gardens your schools and your children. Coal dust contains formaldehyde, mercury and other known carcinogens. Here is the report, it's a detailed study of the dangers of coal dust exposure in the environment and the associated health risks.

Ellen reads.

The second issue is wind-blown coal dust. Here is a picture of the Westshore Coal Terminal at Delta B.C. near the Tsawwassen Ferry terminal just across the border from here. The Westshore Corporation store their coal above ground just like Gateway proposes to do here at Cherry Point.

Winds blew this coal dust to the community of Ladner ten miles away. Families living at Point Roberts south of Delta complain of coal dust raining down on their homes and properties. Coal dust is horrible, it invades the tiniest cracks and coats everything both inside the home as well as outside. I know, I was raised in the Ohio Valley near coal fields and steel mills fired by coal. Fortunately, I left at an early age but most of my siblings still live there and suffer from a variety of illnesses related to that environment. My brother Henry died several years ago from a condition known as black lung that led to lung cancer. SSA has no plans to contain their dirty product. They plan to store their product above ground. Subsequently, the coal dust from trains and the proposed terminal will blow across the county-side into this community.

You may have noticed the coal trains that sneak through here at night, park on the siding just north of Ferndale. Sometimes waiting days for permission from Canadian authorities to proceed to Westshore and dump their coal. Canada has so many trains coming and going that the U.S. coal industry must wait their turn. The waiting coal trains here are losing coal dust as well. The coal sits in open coal cars with no protection from the winds and rain.

Recently, The Gray's Harbor Coal dock proposal was withdrawn as a possible site since the Grey's Harbor Council insisted upon a thorough comprehensive environmental survey. We submit this report as well.

Source Watch website tells us the infamous Goldman Sachs of Wall Street owns 49% of SSA Marine, the builders of the proposed coal terminal at Cherry Point. Goldman Sachs also have holdings in China and other countries around the world where they build and own coal fired power houses, including the US. In other words, they want to ship their coal to their own interests around the world.

It's a risky undertaking considering the health of our residents and the health of our environment. Do we want Wall Street billionaires telling us what's good for Whatcom County or for that matter the State of Washington? I don't think so!
Thank you for your time.



UNITED STATES
DEPARTMENT OF LABOR

Submitted by
Doug + Ellen Cameron
250 H. St. Box 823
Blaine, WA 98230

SEARCH

[A to Z Index](#) | [En español](#) | [Contact Us](#) | [FAQs](#) | [About OSHA](#)

OSHA

OSHA QuickTakes

Newsletter

RSS Feeds

Print This Page

Was this page helpful?

Occupational Safety & Health Administration [We Can Help](#)

[Home](#) [Workers](#) [Regulations](#) [Enforcement](#) [Data & Statistics](#)

Training

Publications

What's New |

Offices

Newsroom

Small Business

OSHA

<< [Back to Occupational Safety and Health Guidelines](#)

Occupational Safety and Health Guideline for Coal Dust (< 5% SiO2)

DISCLAIMER:

These guidelines were developed under contract using generally accepted secondary sources. The protocol used by the contractor for surveying these data sources was developed by the National Institute for Occupational Safety and Health (NIOSH), the Occupational Safety and Health Administration (OSHA), and the Department of Energy (DOE). The information contained in these guidelines is intended for reference purposes only. None of the agencies have conducted a comprehensive check of the information and data contained in these sources. It provides a summary of information about chemicals that workers may be exposed to in their workplaces. The secondary sources used for supplements III and IV were published before 1992 and 1993, respectively, and for the remainder of the guidelines the secondary sources used were published before September 1996. This information may be superseded by new developments in the field of industrial hygiene. Therefore readers are advised to determine whether new information is available.

[Introduction](#) | [Recognition](#) | [Evaluation](#) | [Controls](#) | [References](#)

Introduction

This guideline summarizes pertinent information about coal dust for workers and employers as well as for physicians, industrial hygienists, and other occupational safety and health professionals who may need such information to conduct effective occupational safety and health programs. Recommendations may be superseded by new developments in these fields; readers are therefore advised to regard these recommendations as general guidelines and to determine whether new information is available.

Recognition

SUBSTANCE IDENTIFICATION

* Formula

Not applicable.

* Structure

(For Structure, see paper copy)

* Synonyms

Sea coal, coal facings, ground bituminous coal, anthracite coal dust, lignite coal dust

* Identifiers

1. CAS No.: None.
2. RTECS No.: GF8281000
3. DOT UN: 1361 32
4. DOT label: Flammable solid

* Appearance and odor

Coal dust is an odorless dark brown to black dust created by the crushing, grinding, or pulverizing coal. The coal dust covered this document contains less than 5 percent free silica.

CHEMICAL AND PHYSICAL PROPERTIES

* Physical data

The physical properties of this coal dust vary depending on the specific type of coal.

1. Molecular weight: Varies.
2. Boiling point: Varies.
3. Specific gravity: Varies.
4. Vapor density: Not applicable.
5. Melting/Freezing point: Varies.
6. Vapor pressure: Not applicable.
7. Solubility: Varies.
8. Evaporation rate: Not applicable.

* Reactivity

1. Conditions contributing to instability: Heat, sparks, open flame, or other ignition sources.
2. Incompatibilities: None reported.
3. Hazardous decomposition products: None reported.
4. Special precautions: None reported.

* Flammability

The National Fire Protection Association has not assigned a flammability rating to coal dust. Other sources rate coal dust as a fire hazard and consider the airborne dust an explosion hazard when these substances are exposed to heat or open flame.

1. Flash point: Data not available.
2. Autoignition temperature: >601 degrees C (>1114 degrees F)-cloud; >200 degrees C (>392 degrees F)-layer
3. Flammable limits in air: >0.05 oz./ft(3)
4. Extinguishant: For small fires use dry chemical, sand, earth, water spray, or regular foam. Use water spray, fog, or regular foam to fight large fires involving coal dust.

Fires involving coal dust should be fought upwind from the maximum distance possible. Keep unnecessary people away; isolate the hazard area and deny entry. For a massive fire in a cargo area, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from the area and let the fire burn. Emergency personnel should stay out of low areas. Containers of coal dust should be moved from the fire area if it is possible to do so safely. If this is not possible, cool fire exposed containers from the sides with water until well after the fire is out. Stay away from the ends of containers. Firefighters should wear a full set of protective clothing and self-contained breathing apparatus when fighting fires involving coal dust.

EXPOSURE LIMITS

* OSHA PEL

The current Occupational Safety and Health Administration (OSHA) permissible exposure limit (PEL) for the respirable fraction coal dust (less than 5 percent silica) is 2.4 milligrams per cubic meter (mg/m³) time-weighted average (TWA) concentration.

* NIOSH REL

* The National Institute for Occupational Safety and Health has not established a recommended exposure limit for coal dust.

* ACGIH TLV

The American Conference of Governmental Industrial Hygienists (ACGIH) has assigned the respirable fraction of coal dust containing less than 5 percent crystalline silica a threshold limit value (TLV) of 2 mg/m³ as a TWA for a normal 8-hour workday and a 40-hour workweek.

* Rationale for Limits

The ACGIH limit is based on the risk of pneumoconiosis [ACGIH 1991, p. 326].

Evaluation

HEALTH HAZARD INFORMATION

* Routes of Exposure

* Exposure to coal dust can occur through inhalation, ingestion, and eye contact.

* Summary of toxicology

① Effects on Animals: Coal dust is a tumorigenic agent in experimental animals. Coal dusts were shown to be equivocal tumorigenic agents associated with lymphomas and, at the higher dose, adrenal cortex tumors in rats exposed to either 6.6 or 14.9 mg/m³ for 6 hours/day intermittently for 86 weeks [NIOSH 1991]. The American Conference of Governmental Industrial Hygienists (ACGIH) considers the toxicity of coal dust with greater than 5 percent silica to be similar to quartz [ACGIH 1991].

* ② Effects on Humans: Coal dust causes pneumoconiosis, bronchitis and emphysema in exposed workers. Coal dust causes coal workers' pneumoconiosis (CWP) [Hathaway et al. 1991]. Simple CWP is characterized by development of coal macules, a focal collection of coal dust particles with a little reticulin and collagen accumulation. These lesions may be visible as small opacities (less than 1 cm in diameter) on X-rays [Hathaway et al. 1991]. Complicated CWP is characterized by lesions consisting of a mass of rubbery well defined black tissue that is often adherent to the chest wall. This is associated with decrements in ventilatory capacity, low diffusing capacity, abnormalities of gas exchange, low arterial oxygen tension, pulmonary hypertension, and premature death. The disease may progress after the cessation of exposure. In X-ray examinations, opacities greater than 1 cm in diameter may be observed [Hathaway et al. 1991]. Coal dust is also recognized as a cause of chronic bronchitis [Rom 1992]. Exposure to coal dust is associated with an increased risk of focal emphysema, which is usually associated with the presence of pneumoconiosis and centrilobular emphysema, which can occur in the absence of pneumoconiosis [Rom 1992]. Workers with rheumatoid arthritis and the simple coalworkers' pneumoconiosis may also have Caplan's Syndrome which involves rapidly developing lung damage [Genium 1990]. ACGIH considers the toxicity of coal dust with greater than 5 percent silica to be similar to quartz [ACGIH 1991].

* Signs and symptoms of exposure

* ① Acute exposure: Symptoms of inhalation of excessive amounts of coal dust include coughing, wheezing, and shortness of breath [Genium 1990].

② Chronic exposure: Chronic exposure to coal dust may result in symptoms of bronchitis and emphysema [Rom 1992].

EMERGENCY MEDICAL PROCEDURES

* Emergency medical procedures: [NIOSH to supply]

Rescue: Remove an incapacitated worker from further exposure and implement appropriate emergency procedures (e.g., those listed on the Material Safety Data Sheet required by OSHA's Hazard Communication Standard [29 CFR 1910.1200]). All workers should be familiar with emergency procedures, the location and proper use of emergency equipment, and methods of protecting themselves during rescue operations.

* EXPOSURE SOURCES AND CONTROL METHODS

The following operations may involve coal dust and lead to worker exposures to this substance:

- The mining and transportation of coal
- Use of coal during operations involving grinding, crushing, or pulverizing

Methods that are effective in controlling worker exposures to coal dust, depending on the feasibility of implementation, are as follows:

- Process enclosure
- Local exhaust ventilation
- General dilution ventilation
- Personal protective equipment

Workers responding to a release or potential release of a hazardous substance must be protected as required by paragraph (q) of OSHA's Hazardous Waste Operations and Emergency Response Standard [29 CFR 1910.120].

Good sources of information about control methods are as follows:

1. ACGIH [1992]. Industrial ventilation--a manual of recommended practice. 21st ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.
2. Burton DJ [1986]. Industrial ventilation--a self study companion. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.



3. Alden JL, Kane JM [1982]. Design of industrial ventilation systems. New York, NY: Industrial Press, Inc.
4. Wadden RA, Scheff PA [1987]. Engineering design for control of workplace hazards. New York, NY: McGraw-Hill.
5. Plog BA [1988]. Fundamentals of industrial hygiene. Chicago, IL: National Safety Council.

MEDICAL SURVEILLANCE

OSHA is currently developing requirements for medical surveillance. When these requirements are promulgated, readers should refer to them for additional information and to determine whether employers whose employees are exposed to coal dust are required to implement medical surveillance procedures.

*** Medical Screening**

Workers who may be exposed to chemical hazards should be monitored in a systematic program of medical surveillance that is intended to prevent occupational injury and disease. The program should include education of employers and workers about work-related hazards, early detection of adverse health effects, and referral of workers for diagnosis and treatment. The occurrence of disease or other work-related adverse health effects should prompt immediate evaluation of primary preventive measures (e.g., industrial hygiene monitoring, engineering controls, and personal protective equipment). A medical surveillance program is intended to supplement, not replace, such measures. To detect and control work-related health effects, medical evaluations should be performed (1) before job placement, (2) periodically during the term of employment, and (3) at the time of job transfer or termination.

*** Preplacement medical evaluation**

Before a worker is placed in a job with a potential for exposure to coal dust, a licensed health care professional should evaluate and document the worker's baseline health status with thorough medical, environmental, and occupational histories, a physical examination, and physiologic and laboratory tests appropriate for the anticipated occupational risks. These should concentrate on the function and integrity of the respiratory system. Medical surveillance for respiratory disease should be conducted using the principles and methods recommended by the American

Thoracic Society.

A preplacement medical evaluation is recommended to assess medical conditions that may be aggravated or may result in increased risk when a worker is exposed to coal dust at or below the prescribed exposure limit. The health care professional should consider the probable frequency, intensity, and duration of exposure as well as the nature and degree of any applicable medical condition. Such conditions (which should not be regarded as absolute contraindications to job placement) include a history and other findings consistent with diseases of the respiratory system.

*** Periodic medical evaluations**

*** Occupational health interviews and physical examinations should be performed at regular intervals during the employment period, as mandated by any applicable Federal, State, or local standard. Where no standard exists and the hazard is minimal, evaluations should be conducted every 3 to 5 years or as frequently as recommended by an experienced occupational health physician. Additional examinations may be necessary if a worker develops symptoms attributable to coal dust exposure. The interviews, examinations, and medical screening tests should focus on identifying the adverse effects of coal dust on the respiratory system. Current health status should be compared with the baseline health status of the individual worker or with expected values for a suitable reference population.**

*** Termination medical evaluations**

The medical, environmental, and occupational history interviews, the physical examination, and selected physiologic or laboratory tests that were conducted at the time of placement should be repeated at the time of job transfer or termination to determine the worker's medical status at the end of his or her employment. Any changes in the worker's health status should be compared with those expected for a suitable reference population. Because occupational exposure to coal dust may cause diseases with prolonged latent periods, the need for medical surveillance may extend well beyond the termination of employment.

*** Biological monitoring**

Biological monitoring involves sampling and analyzing body tissues or fluids to provide an index of exposure to a toxic substance or metabolite. No biological monitoring test acceptable for routine use has yet been developed for coal dust.

WORKPLACE MONITORING AND MEASUREMENT

Determination of a worker's exposure to the airborne respirable fraction of coal dust containing less than 5 percent silica is made using a tared low ash polyvinyl chloride (LAPVC) filter (5 microns), preceded by a 10 mm cyclone. Samples are collected at a maximum flow rate of 1.7 liters/minute until a maximum collection volume of 816 liters is reached. Analysis is conducted

by gravimetric analysis (weighing). This method is described in the OSHA Computerized Information System [OSHA 1994] and fully validated. NIOSH has also published a similar method (Method No. 0600) for respirable sampling of nuisance dusts [NIOS 1994b].

Controls

* PERSONAL HYGIENE PROCEDURES

If coal dust contacts the skin, workers should wash the affected areas with soap and water.

Clothing contaminated with coal dust should be removed immediately, and provisions should be made for the safe removal of chemical from the clothing. Persons laundering the clothes should be informed of the hazardous properties of coal dust.

A worker who handles coal dust should thoroughly wash hands, forearms, and face with soap and water before eating, using tobacco products, using toilet facilities, applying cosmetics, or taking medication.

Workers should not eat, drink, use tobacco products, apply cosmetics, or take medication in areas where coal dust handled, processed, or stored.

STORAGE

In the event coal dust requires storage, it should be stored in a cool, dry, well-ventilated area in tightly sealed containers that labeled in accordance with OSHA's Hazard Communication Standard [29 CFR 1910.1200]. Containers of coal dust should be protected from physical damage and ignition sources and should be stored separately from oxidizing agents.

* SPILLS AND LEAKS

In the event of a spill or leak involving coal dust, persons not wearing protective equipment and clothing should be restricted from contaminated areas until cleanup has been completed. The following steps should be undertaken following a spill or leak:

1. Do not touch the spilled material.
2. Notify safety personnel.
3. Remove all sources of heat and ignition.
4. Use non-sparking tools.
5. Water spray may be used cautiously to wet down the coal dust to reduce raising dust.
6. Collect the spilled material and place the material into a covered metal container for disposal or reclamation.

* SPECIAL REQUIREMENTS

U.S. Environmental Protection Agency (EPA) requirements for emergency planning, reportable quantities of hazardous releases, community right-to-know, and hazardous waste management may change over time. Users are therefore advised to determine periodically whether new information is available.

* Emergency planning requirements

Coal dust is not subject to EPA emergency planning requirements under the Superfund Amendments and Reauthorization Act (SARA) (Title III) in 42 USC 11022.

* Reportable quantity requirements for hazardous releases

A hazardous substance release is defined by EPA as any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of contaminated containers) of hazardous substances. In the event of a release that is above the reportable quantity for that chemical, employers are required to notify the proper Federal, State, and local authorities [40 CFR 355.40].

Employers are not required by the emergency release notification provisions in 40 CFR Part 355.40 to notify the National Response Center of an accidental release of coal dust; there is no reportable quantity for this substance.

* Community right-to-know requirements

Employers are not required by EPA in 40 CFR Part 372.30 to submit a Toxic Chemical Release Inventory form (Form R) to EPA reporting the amount of coal dust emitted or released from their facility annually.

* Hazardous waste management requirements

* EPA considers a waste to be hazardous if it exhibits any of the following characteristics: ignitability, corrosivity, reactivity, or

toxicity as defined in 40 CFR 261.21-261.24. Under the Resource Conservation and Recovery Act (RCRA) [40 USC 6901 et seq.], EPA has specifically listed many chemical wastes as hazardous. Although coal dust is not specifically listed as a hazardous waste under RCRA, EPA requires employers to treat waste as hazardous if it exhibits any of the characteristics discussed above.

Providing detailed information about the removal and disposal of specific chemicals is beyond the scope of this guideline. The U.S.

Department of Transportation, EPA, and State and local regulations should be followed to ensure that removal, transport, and disposal of this substance are conducted in accordance with existing regulations. To be certain that chemical waste disposal meets EPA regulatory requirements, employers should address any questions to the RCRA hotline at (703) 412-9810 (in the Washington, D.C. area) or toll-free at (800) 424-9346 (outside Washington, D.C.). In addition, relevant State and local authorities should be contacted for information on any requirements they may have for the waste removal and disposal of this substance.

* RESPIRATORY PROTECTION

* Conditions for respirator use

Good industrial hygiene practice requires that engineering controls be used where feasible to reduce workplace concentrations of hazardous materials to the prescribed exposure limit. However, some situations may require the use of respirators to control exposure. Respirators must be worn if the ambient concentration of coal dust exceeds prescribed exposure limits. Respirators may be used (1) before engineering controls have been installed, (2) during work operations such as maintenance or repair activities that involve unknown exposures, (3) during operations that require entry into tanks or closed vessels, and (4) during emergencies. Workers should only use respirators that have been approved by NIOSH and the Mine Safety and Health Administration (MSHA).

* Respiratory protection program

- * Employers should institute a complete respiratory protection program that, at a minimum, complies with the requirements of OSHA's Respiratory Protection Standard [29 CFR 1910.134]. Such a program must include respirator selection, an evaluation of the worker's ability to perform the work while wearing a respirator, the regular training of personnel, respirator fit testing, periodic workplace monitoring, and regular respirator maintenance, inspection, and cleaning. The implementation of an adequate respiratory protection program (including selection of the correct respirator) requires that a knowledgeable person be in charge of the program and that the program be evaluated regularly. For additional information on the selection and use of respirators and on the medical screening of respirator users, consult the latest edition of the NIOSH Respirator Decision Logic [NIOSH 1987b] and the NIOSH Guide to Industrial Respiratory Protection [NIOSH 1987a].

* PERSONAL PROTECTIVE EQUIPMENT

Workers should use appropriate personal protective clothing and equipment that must be carefully selected, used, and maintained to be effective in preventing skin contact with coal dust. The selection of the appropriate personal protective equipment (PPE) (e.g., gloves, sleeves, encapsulating suits) should be based on the extent of the worker's potential exposure to coal dust. There are no published reports on the resistance of various materials to permeation by coal dust.

To evaluate the use of PPE materials with coal dust, users should consult the best available performance data and manufacturers' recommendations. Significant differences have been demonstrated in the chemical resistance of generically similar PPE materials (e.g., butyl) produced by different manufacturers. In addition, the chemical resistance of a mixture may be significantly different from that of any of its neat components.

Any chemical-resistant clothing that is used should be periodically evaluated to determine its effectiveness in preventing dermal contact. Safety showers and eye wash stations should be located close to operations that involve coal dust.

Splash-proof chemical safety goggles or face shields (20 to 30 cm long, minimum) should be worn during any operation in which a solvent, or other toxic substance may be splashed into the eyes.

- * In addition to the possible need for wearing protective outer apparel (e.g., aprons, encapsulating suits), workers should wear work uniforms, coveralls, or similar full-body coverings that are laundered each day. Employers should provide lockers or other closed areas to store work and street clothing separately. Employers should collect work clothing at the end of each work shift and provide for its laundering. Laundry personnel should be informed about the potential hazards of handling contaminated clothing and instructed about measures to minimize their health risk.

Protective clothing should be kept free of oil and grease and should be inspected and maintained regularly to preserve its effectiveness.

Protective clothing may interfere with the body's heat dissipation, especially during hot weather or during work in hot or poorly ventilated work environments.

What guidelines and protection would be available for citizens living in communities exposed to coal dust from either trains or a terminal?

References

- ACGIH [1991]. Documentation of the threshold limit values and biological exposure indices. 6th ed. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.
- ACGIH [1994]. 1994-1995 Threshold limit values for chemical substances and physical agents and biological exposure indices. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.
- ATS [1987]. Standardization of spirometry -- 1987 update. American Thoracic Society. *Am Rev Respir Dis* 136:1285-1296.
- CFR. Code of Federal regulations. Washington, DC: U.S. Government Printing Office, Office of the Federal Register.
- DOT [1993]. 1993 Emergency response guidebook, guide 32. Washington, DC: U.S. Department of Transportation, Office of Hazardous Materials Transportation, Research and Special Programs Administration.
- Genium [1990]. Material safety data sheet No. 491. Schenectady, NY: Genium Publishing Corporation.
- Hathaway GJ, Proctor NH, Hughes JP, and Fischman ML [1991]. Proctor and Hughes' chemical hazards of the workplace. 3rd ed. New York, NY: Van Nostrand Reinhold.
- Mickelsen RL, Hall RC [1987]. A breakthrough time comparison of nitrile and neoprene glove materials produced by different glove manufacturers. *Am Ind Hyg Assoc J* 48(11): 941-947.
- Mickelsen RL, Hall RC, Chern RT, Myers JR [1991]. Evaluation of a simple weight-loss method for determining the permeation of organic liquids through rubber films. *Am Ind Hyg Assoc J* 52(10): 445-447.
- NIOSH [1987a]. NIOSH guide to industrial respiratory protection. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 87-116.
- NIOSH [1987b]. NIOSH respirator decision logic. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 87-108.
- NIOSH [1991]. Registry of toxic effects of chemical substances: Coal, ground bituminous. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, Division of Standards Development and Technology Transfer, Technical Information Branch.
- NIOSH [1994a]. NIOSH pocket guide to chemical hazards. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 94-116.
- NIOSH [1994b]. NIOSH manual of analytical methods. 4th ed. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, DHHS (NIOSH) Publication No. 94-113.
- NIOSH [1995]. Registry of toxic effects of chemical substances: Coal, ground bituminous. Cincinnati, OH: U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, National Institute for Occupational Safety and Health, Division of Standards Development and Technology Transfer, Technical Information Branch.
- OSHA [1994]. Computerized information system. Washington, DC: U.S. Department of Labor, Occupational Safety and Health Administration.
- Rom WN [1992]. Environmental and occupational medicine. 2nd ed. Boston, MA: Little, Brown and Company.
- Sittig M [1991]. Handbook of toxic and hazardous chemicals. 3rd ed. Park Ridge, NJ: Noyes Publications.
- USC. United States code. Washington, DC: U.S. Government Printing Office.

Unexpected wind gust stirs up coal dust at Roberts Bank

THE DELTA OPTIMIST APRIL 13, 2012



An unexpected gust of wind stirred up coal dust at Westshore Terminal Thursday afternoon.

Photograph by: Jerry Bierens, for Delta Optimist