

EXHIBIT

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11/7/99 KC

PLAINTIFF'S EXHIBIT

ASA-864

EXHIBIT

Case
No. 4

§ 1910.93a

Title 29—Labor

TABLE G-3—MINERAL DUSTS*

Substance	Mppcf*	Mg/M ³
Crystalline: Quartz (respirable).....	250 [†]	10mg/M ³ = 7% SiO ₂ —3 30mg/M ³
Quartz (total dust).....		7% SiO ₂ +2
Cristobalite: Use 1/5 the value calculated from the count or mass formulae for quartz.		
Tridymite: Use 1/5 the value calculated from the for- mulae for quartz.		
Amorphous, including natural diatomaceous earth.....	20	50mg/M ³ 7% SiO ₂
Silicates (less than 1% crys- talline silica):		
Mica.....	20	
Soapstone.....	20	
Talc (non-asbestos-form) ..	20 [‡]	
Talc (fibrous). Use asbestos limit.		
Tremolite (see talc, fibrous).		
Portland cement.....	50	
Graphite (natural).....	15	
Coal dust (respirable fraction less than 5% SiO ₂).....		1.4mg/M ³ or 10mg/M ³ 7% SiO ₂ +2
For more than 5% SiO ₂		
Inert or Nuisance Dust:		
Respirable fraction.....	15	5mg/M ³
Total dust.....	50	15mg/M ³

NOTE: Conversion factors—
 mppcf(x35.3)=million particles per cubic meter
 =particles per c.c.

* Millions of particles per cubic foot of air, based on
 impinger samples counted by light-field techniques.

† The percentage of crystalline silica in the formula
 is the amount determined from air-borne samples, ex-
 cept in those instances in which other methods have been
 shown to be applicable.

‡ As determined by the membrane filter method at
 430X phase contrast magnification.

• Both concentration and percent quartz for the ap-
 plication of this limit are to be determined from the fraction
 passing a size-selector with the following characteristics:

• Containing < 1% quartz; if > 1% quartz, use quartz
 limit.

Aerodynamic diameter (unit density sphere)	Percent passing selector
2	90
2.5	75
3.5	50
5.0	25
10	0

The measurements under this note refer to the use of
 an AEC instrument. If the respirable fraction of coal
 dust is determined with a MRE the figure corresponding
 to that of 1.4 Mg/M³ in the table for coal dust is 4.5 Mg/M³.

§ 1910.93a Asbestos.

(a) Definitions. For the purpose of
 this section. (1) "Asbestos" includes
 chrysotile, amosite, crocidolite, tremo-
 lite, anthophyllite, and actinolite.

(2) "Asbestos fibers" means asbest
 fibers longer than 5 micrometers.

(b) Permissible exposure to airborne
 concentrations of asbestos fibers—
 Standard effective July 7, 1972. The
 8-hour time-weighted average airborne
 concentrations of asbestos fibers
 which any employee may be expos-
 shall not exceed five fibers, longer th
 5 micrometers, per cubic centimeter
 air, as determined by the method pr
 scribed in paragraph (e) of this sectio

(2) Standard effective July 1, 1972.
 The 8-hour time-weighted average a
 borne concentrations of asbestos fibe
 to which any employee may be expos
 shall not exceed two fibers, longer th
 5 micrometers, per cubic centimeter
 air, as determined by the method pr
 scribed in paragraph (e) of this sectio

(3) Ceiling concentration. No e
 mployee shall be exposed at any time
 airborne concentrations of asbes
 fibers in excess of 10 fibers, longer th
 5 micrometers, per cubic centimeter
 air, as determined by the method pr
 scribed in paragraph (e) of this sectio

(c) Methods of compliance—(1) E
 gineering methods. (i) Engineering co
 ntrols. Engineering controls, such as, l
 not limited to, isolation, enclosure, c
 haust ventilation, and dust collecti
 shall be used to meet the exposure lim
 prescribed in paragraph (b) of t
 section.

(ii) Local exhaust ventilation. L
 Local exhaust ventilation and dust c
 lection systems shall be designed, co
 nstructed, installed, and maintained
 accordance with the American Natio
 Standard Fundamentals Governing
 Design and Operation of Local Exha
 Systems, ANSI Z9.2-1971, which is
 incorporated by reference herein.

(b) See § 1910.6 concerning the av
 ability of ANSI Z9.2-1971, and
 maintenance of a historic file in con
 ntion therewith. The address of the Am
 ican National Standards Institute
 given in § 1910.100.

(iii) Particular tools. All hand-
 erated and power-operated tools wh
 may produce or release asbestos fil
 in excess of the exposure limits
 scribed in paragraph (b) of this sect
 such as, but not limited to, saws, scor
 abrasive wheels, and drills, shall be
 vided with local exhaust ventilation
 tems in accordance with subdivision
 of this subparagraph.

(2) Work practices—(i) Wet meth
 Insofar as practicable, asbestos sha

means asbestos
micrometers.

exposure to airborne
asbestos fibers—(1)
July 7, 1972. The
average airborne
asbestos fibers to
employee may be exposed
five fibers, longer than
per cubic centimeter of
by the method pre-
graph (e) of this section,
effective July 1, 1976.
8-hour time-weighted average air-
borne concentrations of asbestos fibers
employee may be exposed
two fibers, longer than
per cubic centimeter of
by the method pre-
graph (e) of this section,
concentration. No em-
ployee exposed at any time to
concentrations of asbestos
of 10 fibers, longer than
per cubic centimeter of
by the method pre-
graph (e) of this section.
of compliance—(1) En-
gineering con-
trols, such as, but
not limited to, enclosure, ex-
haust, and dust collection,
must meet the exposure limits
prescribed in paragraph (b) of this

exhaust ventilation. (a)
Exhaust ventilation and dust col-
lection shall be designed, con-
structed, and maintained in
accordance with the American National
Standards Institute (ANSI) Z9.2-1971, which is in-
cluded by reference herein.
§ 1910.6 concerning the avail-
ability of ANSI Z9.2-1971, and the
maintenance of an historic file in connec-
tion therewith. The address of the Amer-
ican National Standards Institute is
1000.

power tools. All hand-op-
erated tools which
may release asbestos fibers
above the exposure limits pre-
scribed in paragraph (b) of this section,
not limited to, saws, scorers,
chisels, and drills, shall be pro-
vided with exhaust ventilation sys-
tems in accordance with subdivision (ii)
of paragraph (c).

Wet methods—(1) Wet methods
feasible, asbestos shall be

handled, mixed, applied, removed, cut,
scored, or otherwise worked in a wet
state sufficient to prevent the emission
of airborne fibers in excess of the ex-
posure limits prescribed in paragraph
(b) of this section, unless the usefulness
of the product would be diminished
thereby.

(ii) Particular products and opera-
tions. No asbestos cement, mortar, coat-
ing, grout, plaster, or similar material
containing asbestos shall be removed
from bags, cartons, or other containers
in which they are shipped, without being
either wetted, or enclosed, or ventilated
so as to prevent effectively the release of
airborne asbestos fibers in excess of the
limits prescribed in paragraph (b) of
this section.

(iii) Spraying, demolition, or removal.
Employees engaged in the spraying of
asbestos, the removal, or demolition of
pipes, structures, or equipment covered
or insulated with asbestos, and in the
removal or demolition of asbestos in-
sulation or coverings shall be provided
with respiratory equipment in accord-
ance with paragraph (d) (2) (iii) of this
section and with special clothing in ac-
cordance with paragraph (d) (3) of this
section.

(d) Personal protective equipment—
(1) Compliance with the exposure limits
prescribed by paragraph (b) of this sec-
tion may not be achieved by the use of
respirators or shift rotation of em-
ployees, except:

(i) During the time period necessary
to install the engineering controls and
to institute the work practices required
by paragraph (c) of this section;

(ii) In work situations in which the
methods prescribed in paragraph (c) of
this section are either technically not
feasible or feasible to an extent insuffi-
cient to reduce the airborne concentra-
tions of asbestos fibers below the limits
prescribed by paragraph (b) of this
section; or

(iii) In emergencies.

(iv) Where both respirators and per-
sonnel rotation are allowed by subdivi-
sions (i), (ii), or (iii) of this subpara-
graph, and both are practicable, person-
nel rotation shall be preferred and used.

(2) Where a respirator is permitted by
subparagraph (1) of this paragraph, it
shall be selected from among those ap-
proved by the Bureau of Mines, Depart-
ment of the Interior, or the National In-
stitute for Occupational Safety and
Health, Department of Health, Educa-

tion, and Welfare, under the provisions of
30 CFR Part 11 (37 F.R. 6244, Mar. 25,
1972), and shall be used in accordance
with subdivisions (i), (ii), (iii), and (iv)
of this subparagraph.

(i) Air purifying respirators. A reusa-
ble or single use air purifying respirator,
or a respirator described in subdivision
(ii) or (iii) of this subparagraph, shall
be used to reduce the concentrations of
airborne asbestos fibers in the respirator
below the exposure limits prescribed in
paragraph (b) of this section, when the
ceiling or the 8-hour time-weighted aver-
age airborne concentrations of asbestos
fibers are reasonably expected to exceed
no more than 10 times those limits.

(ii) Powered air purifying respirators.
A full facepiece powered air purifying
respirator, or a powered air purifying
respirator, or a respirator described in
subdivision (iii) of this subparagraph,
shall be used to reduce the concentra-
tions of airborne asbestos fibers in the
respirator below the exposure limits pre-
scribed in paragraph (b) of this section,
when the ceiling or the 8-hour time-
weighted average concentrations of
asbestos fibers are reasonably expected
to exceed 10 times, but not 100 times,
those limits.

(iii) Type "C" supplied-air respirators,
continuous flow or pressure-demand
class. A type "C" continuous flow or pres-
sure-demand, supplied-air respirator
shall be used to reduce the concentra-
tions of airborne asbestos fibers in the
respirator below the exposure limits pre-
scribed in paragraph (b) of this section,
when the ceiling or the 8-hour time-
weighted average airborne concentra-
tions of asbestos fibers are reasonably
expected to exceed 100 times those limits.

(iv) Establishment of a respirator pro-
gram. (a) The employer shall establish
a respirator program in accordance with
the requirements of the American Na-
tional Standards Practices for Respira-
tory Protection, ANSI Z88.2-1969, which
is incorporated by reference herein.

b. See § 1910.6 concerning the avail-
ability of ANSI Z88.2-1969 and the main-
tenance of an historic file in connection
therewith. The address of the American
National Standards Institute is given in
§ 1910.100.

(c) No employee shall be assigned to
tasks requiring the use of respirators if,
based upon his most recent examination,
an examining physician determines that
the employee will be unable to function
normally wearing a respirator, or that

the safety or health of the employee or other employees will be impaired by his use of a respirator. Such employee shall be rotated to another job or given the opportunity to transfer to a different position whose duties he is able to perform with the same employer, in the same geographical area and with the same seniority, status, and rate of pay he had just prior to such transfer, if such a different position is available.

(3) **Special clothing:** The employer shall provide, and require the use of, special clothing, such as coveralls or similar whole body clothing, head coverings, gloves, and foot coverings for any employee exposed to airborne concentrations of asbestos fibers, which exceed the ceiling level prescribed in paragraph (b) of this section.

(4) **Change rooms:** (i) At any fixed place of employment exposed to airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section, the employer shall provide change rooms for employees working regularly at the place.

(ii) **Clothes lockers:** The employer shall provide two separate lockers or containers for each employee, so separated or isolated as to prevent contamination of the employee's street clothes from his work clothes.

(iii) **Laundering:** (a) Laundering of asbestos contaminated clothing shall be done so as to prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(b) Any employer who gives asbestos-contaminated clothing to another person for laundering shall inform such person of the requirement in (a) of this subdivision to effectively prevent the release of airborne asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section.

(c) Contaminated clothing shall be transported in sealed impermeable bags, or other closed, impermeable containers, and labeled in accordance with paragraph (g) of this section.

(e) **Method of measurement.** All determinations of airborne concentrations of asbestos fibers shall be made by the membrane filter method at 400-450 X magnification (4 millimeter objective) with phase contrast illumination.

(f) **Monitoring—(1) Initial determinations.** Within 6 months of the publication of this section, every employer shall cause every place of employment

where asbestos fibers are released to be monitored in such a way as to determine whether every employee's exposure to asbestos fibers is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employer shall immediately undertake a compliance program in accordance with paragraph (c) of this section.

(2) **Personal monitoring—(i)** Samples shall be collected from within the breathing zone of the employees, using membrane filters of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) **Sampling frequency and pattern.** After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall the sampling be done at intervals greater than 6 months for employees whose exposure to asbestos may reasonably be foreseen to exceed the limits prescribed by paragraph (b) of this section.

(3) **Environmental monitoring—**samples shall be collected from areas of a work environment which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentrations and of the ceiling concentrations of asbestos fibers.

(ii) **Sampling frequency and pattern.** After the initial determinations required by subparagraph (1) of this paragraph, samples shall be of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of employees. In no case shall sampling be done at intervals greater than 6 months for employees whose exposures to asbestos may reasonably be foreseen to exceed the exposure limits prescribed in paragraph (b) of this section.

(4) **Employee observation of monitoring.** Affected employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring required by this paragraph and shall have access to the records thereof.

fibers are released to be in a way as to determine employee's exposure to is below the limits prescribed in paragraph (b) of this section. If the limits are exceeded, the employee shall immediately undertake a sampling in accordance with the requirements of this section.

Monitoring—(i) Samples shall be collected from within the breathing zone of the employees, on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentration of asbestos fibers.

(ii) Frequency and patterns of sampling shall be determined in accordance with paragraph (1) of this section. The frequency and pattern of such frequency and pattern shall be determined with reasonable levels of exposure of employees. The sampling shall be done at least once every 6 months or more frequently if exposure to asbestos is foreseen to exceed the limits prescribed in paragraph (b) of this section.

Environmental monitoring—(i) Samples shall be collected from areas of the workplace which are representative of the airborne concentrations of asbestos fibers which may reach the breathing zone of employees. Samples shall be collected on a membrane filter of 0.8 micrometer porosity mounted in an open-face filter holder. Samples shall be taken for the determination of the 8-hour time-weighted average airborne concentration of asbestos fibers and of the ceiling concentration of asbestos fibers.

(ii) Frequency and patterns of sampling shall be determined in accordance with paragraph (1) of this section. The frequency and pattern of such frequency and pattern shall be determined with reasonable levels of exposure of employees. In no case shall sampling be done at less than 6 months or more frequently if exposure to asbestos is foreseen to exceed the limits prescribed in paragraph (b) of this section.

Observation of monitoring—(i) Employees, or their representatives, shall be given a reasonable opportunity to observe any monitoring conducted in accordance with paragraph (b) of this section and shall have access to the records thereof.

(g) **Caution signs and labels.** (1) **Caution signs.** (i) **Posting.** Caution signs shall be provided and displayed at each location where airborne concentrations of asbestos fibers may be in excess of the exposure limits prescribed in paragraph (b) of this section. Signs shall be posted at such a distance from such a location so that an employee may read the signs and take necessary protective steps before entering the area marked by the signs. Signs shall be posted at all approaches to areas containing excessive concentrations of airborne asbestos fibers.

(ii) **Sign specifications.** The warning signs required by subdivision (i) of this subparagraph shall conform to the requirements of 20" x 14" vertical format signs specified in § 1910.145(d)(4), and to this subdivision. The signs shall display the following legend in the lower panel, with letter sizes and styles of a visibility at least equal to that specified in this subdivision.

Legend	Notation
Asbestos -----	1" Sans Serif, Gothic or Block.
Dust Hazard -----	3/4" Sans Serif, Gothic or Block.
Avoid Breathing Dust.---	1/4" Gothic.
Wear Assigned Protective Equipment.	1/4" Gothic.
Do Not Remain In Area Unless Your Work Requires It.	1/4" Gothic.
Breathing Asbestos Dust May Be Hazardous To Your Health.	14 point Gothic.

Spacing between lines shall be at least equal to the height of the upper of any two lines.

(2) **Caution labels—**(i) **Labeling.** Caution labels shall be affixed to all raw materials, mixtures, scrap, waste, debris, and other products containing asbestos fibers, or to their containers, except that no label is required where asbestos fibers have been modified by a bonding agent, coating, binder, or other material so that during any reasonably foreseeable use, handling, storage, disposal, processing, or transportation, no airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section will be released.

(ii) **Label specifications.** The caution labels required by subdivision (i) of this subparagraph shall be printed in letters of sufficient size and contrast as to be

readily visible and legible. The label shall state:

CAUTION

Contains Asbestos Fibers

Avoid Creating Dust

Breathing Asbestos Dust May Cause Serious Bodily Harm

(h) **Housekeeping—**(1) **Cleaning.** All external surfaces in any place of employment shall be maintained free of accumulations of asbestos fibers if, with their dispersion, there would be an excessive concentration.

(2) **Waste disposal.** Asbestos waste, scrap, debris, bags, containers, equipment, and asbestos-contaminated clothing, consigned for disposal, which may produce in any reasonably foreseeable use, handling, storage, processing, disposal, or transportation airborne concentrations of asbestos fibers in excess of the exposure limits prescribed in paragraph (b) of this section shall be collected and disposed of in sealed impermeable bags, or other closed, impermeable containers.

(i) **Recordkeeping—**(1) **Exposure records.** Every employer shall maintain records of any personal or environmental monitoring required by this section. Records shall be maintained for a period of at least 3 years and shall be made available upon request to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of the National Institute for Occupational Safety and Health, and to authorized representatives of either.

(2) **Employee access.** Every employee and former employee shall have reasonable access to any record required to be maintained by subparagraph (1) of this paragraph, which indicates the employee's own exposure to asbestos fibers.

(3) **Employee notification.** Any employee found to have been exposed at any time to airborne concentrations of asbestos fibers in excess of the limits prescribed in paragraph (b) of this section shall be notified in writing of the exposure as soon as practicable but not later than 5 days of the finding. The employee shall also be timely notified of the corrective action being taken.

(j) **Medical examinations—**(1) **General.** The employer shall provide or make available at his cost, medical examinations relative to exposure to asbestos required by this paragraph.

(2) **Preplacement.** The employer shall provide or make available to each of his employees, within 30 calendar days fol-

lowing his first employment in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination, which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}).

(3) *Annual examinations.* On or before January 31, 1973, and at least annually thereafter, every employer shall provide, or make available, comprehensive medical examinations to each of his employees engaged in occupations exposed to airborne concentrations of asbestos fibers. Such annual examination shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}).

(4) *Termination of employment.* The employer shall provide, or make available, within 30 calendar days before or after the termination of employment of any employee engaged in an occupation exposed to airborne concentrations of asbestos fibers, a comprehensive medical examination which shall include, as a minimum, a chest roentgenogram (posterior-anterior 14 x 17 inches), a history to elicit symptomatology of respiratory disease, and pulmonary function tests to include forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV_{1.0}).

(5) *Recent examinations.* No medical examination is required of any employee, if adequate records show that the employee has been examined in accordance with this paragraph within the past 1-year period.

(6) *Medical records.*—(i) *Maintenance.* Employers of employees examined pursuant to this paragraph shall cause to be maintained complete and accurate records of all such medical examinations. Records shall be retained by employers for at least 20 years.

(ii) *Access.* The contents of the records of the medical examinations required by this paragraph shall be made available, for inspection and copying, to the Assistant Secretary of Labor for Occupational Safety and Health, the Director of NIOSH, to authorized physicians and medical consultants of either

of them, and, upon the request of an employee or former employee, to his physician. Any physician who conducts medical examination required by this paragraph shall furnish to the employee of the examined employee all the information specifically required by this paragraph, and any other medical information related to occupational exposure to asbestos fibers.

§ 1910.93b Coal tar pitch volatiles; interpretation of term.

As used in § 1910.93 (Table G-1), coal tar pitch volatiles include the fused polycyclic hydrocarbons which volatilize from the distillation residues of coal petroleum, wood, and other organic matter.

(Sec. 8(g), 84 Stat. 1600, 29 U.S.C. 657) [3 FR 24749, Nov. 21, 1972]

§ 1910.93c Carcinogens.

(a) *Scope and application.*—This section applies to any activity in which a carcinogen is manufactured, processed, used, repackaged, released, handled, or otherwise present in any manner.

(b) *Definitions.*—(1) "Carcinogen" means any of the substances listed below, or compositions containing such substances, but does not include compositions containing less than 1 percent by weight of the listed carcinogens:

Compound No.	Chemicals	Chemical abstracts registry No.
1.....	2-Acetylaminofluorene.....	53963
2.....	4-Aminodiphenyl.....	92671
3.....	Benzidine (and its salts).....	92573
4.....	3,3'-Dichlorobenzidine (and its salts).....	91241
5.....	4-Dimethylaminoazobenzene.....	60117
6.....	alpha-Naphthylamine.....	134327
7.....	beta-Naphthylamine.....	91576
8.....	4-Nitrobiphenyl.....	92933
9.....	N-Nitrosodimethylamine.....	62757
10.....	beta-Propiolactone.....	57377
11.....	bis-Chloromethyl ether.....	542661
12.....	Methyl Chloromethyl ether.....	107302
13.....	4,4'-Methylene(bis)-2-chloroaniline.....	101144
14.....	Ethyleneimine.....	151564

(2) "Controlled area" means an area to which access is restricted and controlled by the employer.

(3) "Decontamination" means the removal or chemical neutralization of a carcinogen to a form that is either non-toxic or not capable of easy absorption into the body.

(4) "Present" includes manufactured, processed, used, repackaged, released, handled, or otherwise present.