OSHA Directives
CPL 2-2.31 - Cotton Dust Manual

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OSHA Instruction CPL 2-2.31
January 16, 1981
Office of Compliance Programming
Subject: Cotton Dust Manual

A. Purpose. This instruction provides guidelines for using the Cotton Dust Manual.

B. Scope. This instruction applies OSHA-wide.

C. References.

1. Industrial Hygiene Field Operations Manual (IHFOM).

2. Field Operations Manual (FOM).

D. Action. Regional Administrators shall ensure that:

1. All policies and procedures described in the Cotton Dust Manual are initiated forthwith.

2. One copy of this instruction is retained with the Cotton Dust Manual, and one is filed in the OSHA Directive System Binder. Two copies of this instruction are included with the manual for this purpose.

E. Federal Program Change. This instruction describes a Federal program change which affects State programs. Each Regional Administrator shall:

1. Ensure that this change is forwarded to each State designee.

2. Explain the technical content of the change to the State designee as requested.

3. Ensure that State designees are asked to acknowledge receipt of this Federal program change in writing, within 30 days of notification, to the Regional Administrator. This acknowledgment

should include a description either of the State's plan to implement the change or of the reasons why the change should not apply to that State.

SPECIAL NOTICE: Additional copies of this instruction for Regional and Area office will be made shortly through the regular distribution system for directives. Do not xerox additional copies.

4. Review policies, instructions and guidelines issued by the State to determine that this change has been monitoring activities (accompanied inspections and case file reviews) shall also be used to determine if this change has been implemented in actual performance.

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DISTRIBUTION: National, Regional and Area Offices A Compliance Officers State Designees NIOSH Regional Program Directors

INTRODUCTION

This manual establishes OSHA policy and procedures necessary for enforcing:

o 29 CFR 1910.1043 and 1910.1000 (for cotton dust) at yarn manufacturing operations;

o 29 CFR 1910.1043 at slashing, weaving, knitting and waste house operations; and

o 29 CFR 1910.1043 at cotton warehousing operations on the premises of the cotton's processors (e.g., on the premises of a cotton textile mill).

This manual does not cover enforcement of 29 CFR 1910.1043 or 1910.1000 at construction work operations performed in work environments (e.g., card rooms) that contain airborne cotton dust.

The manual supplements the Field Operations Manual (FOM) and Industrial Hygiene Field Operations Manual (IHFOM), as a special program limited to cotton dust. In areas where the guidance of this manual differs from that of the FOM or IHFOM, however, this manual's guidance takes precedence. Chapter I of this manual provides general, overall guidance for a cotton dust inspection. The remainder of the manual provides more detailed guidance on various aspects of the enforcement process.

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CHAPTER I

COTTON DUST INSPECTION

A. Purpose. This chapter provides general guidelines for managing and performing cotton dust inspections.

B. Preinspection Planning.

1. Manpower. Where sampling is necessary, approximately 40 or more man-days of field time and filter weighing time will be necessary to inspect an average textile mill, using the procedures described in this chapter.

2. Inspection Teams. A team inspection is necessary when sampling will be performed because sampling devices are difficult for one person alone to transport. The size of the team depends upon the size of the plant to be inspected, but should be limited to four people because of the logistical problems encountered in setting up the vertical elutriators' in the plant. Most teams will consist of three compliance officers--two industrial hygienists and a safety specialist or safety engineer who is competent at inspecting all aspects of electrical wiring.

3. Equipment.

a. Vertical elutriators will be allocated to Area Offices based upon their projected need to use them. Area Offices not equipped with the necessary equipment for an inspection can arrange to obtain it through the Regional Technical Support Office. A list of sampling equipment necessary for an inspection is shown in Figure I-1.

b. Before going to the inspection site, the equipment must be checked to see if it performs properly. Appropriate calibration checks of the flow rate must be made using a 2- or 3-liter bubble meter. Examine the elutriator shell for dents which could change the device's flow characteristics and invalidate the results.

LIST OF EQUIPMENT AND SUPPLIES FOR COTTON DUST SAMPLING

Item Name Quantity

Vertical elutriator (VE) approved for 5 to 10 for textile mill use in Class III locations.

2- or 3- liter burette (for 2 per Area Office office) for calibrating VE.

Extra tubing for elutriators. Approximately 25 feet.

Electrical tape for sealing 1 roll per industrial cassettes to elutriator. hygienist

Duct tape for taping down Several rolls electrical cords.

3-piece preweighed cassettes, 3 per elutriator per 37 millimeter diameter, with sampling day, plus 2 per PVC filters. personal sampling system per sampling day.

Cassette sealing bands. Based on number of cassettes taken

Cassette carrying case. Based on number of cassettes taken

Tool Kits - 10" crescent wrench; 1 per every 5 VE's 1/8 and 1/4 spade screwdriver; #2 (medium) Phillips screwdriver; 8" pliers; tool bag or box.

Voltmeter. 1

Circuit Tester (for checking polarity 1 and grounding).

Extension cords in several lengths, 100 feet for each VE 100 feet, 50 feet and 25 feet. [Cords shall be junior hard service or hard service, or type SJO or SO, and shall have three, size 14 (AWG), current-carrying conductors.]

Multi-terminal electrical boxes. 1 for each VE

Extension cord coverplates for 3 to 8 running cords across aisleways (optional).

Rubber stoppers with short tube 2 to 6 for VE calibration.

Station wagons for transporting VE's 1 for every 4 VE's and equipment to plant.

NOTE: All items are local purchase except the vertical elutriators. The station wagons are GSA rentals.

Figure I-1

c. A sufficient number of preweighed filters to last through the inspection must be taken to the inspection site. As a rule of thumb, take three filters per day for each vertical elutriator sampling system, and two filters per day for each personal sampling system.

4. Scope of Inspection. In general, inspections under the cotton dust standard should cover the entire plant affected by cotton dust. Under circumstances where a complete inspection is not appropriate, the case file shall contain reasons to justify the limited scope of the inspection.

C. Opening Conference.

1. Obtain information regarding the plant operation, such as:

a. Type of product produced.

b. Blends (percent cotton, percent synthetic).

c. Grade of cotton, percent grade used, and the locations where it is used.

d. Description of operations and plant.

e. Plant layout diagrams, if available.

f. Types of operations.

g. Number of employees at each operation.

h. Terms of employment. Incentive? Salary? Hourly?

i. Pattern of hours worked--number of shifts, number of hours per day, number of hours per week.

j. General job description of employees--number of machines tended and percent of time spent at different locations (including lunch and break periods).

k. Copy of respirator program.

l. Copy of training program.

m. Copy of work practice program (start-up date, June 27, 1980).

n. Copy of compliance program (start-up date, March 27, 1981).

2. Quickly evaluate the results of the employer's cotton dust monitoring program prior to the walkaround. Locations of employer sampling should be marked on the plant layouts, if possible, to aid in determining later whether the sites were chosen properly.

D. Walkaround.

1. Plant Information During the Walkaround. The industrial hygienist should gather information to assess the adequacy of the sampling results made by the employer, and data to establish an OSHA sampling strategy. Specifically:

a. Identify machines operated or tended by a representative employee in each area of the plant.

b. Consider the job description of the employee as provided during the opening conference.

c. Interview the employer and employees as necessary to establish the locations and work patterns.

d. Identify the employer's sampling locations; ask the reasons for choosing them; and record comments and notes on the adequacy of the locations for determining employee exposure.

e. Record pertinent comments on the ventilation of the workplace, such as the general air flow patterns and the dust sources in the area. This description should be very general, to help estimate dust levels. A more specific analysis of the engineering and work practice controls will occur during the sampling.

2. If the employer does not have an adequate plant layout, sketch a plant layout for each plant area or process.

3. Identify electrical outlets for OSHA vertical elutriator sampling. Select for use outlets that are as near as possible to the locations selected for the samplers.

4. Determine if the outlets provide 60 cycle alternating current and 110-120 voltage. Check for correct polarity and grounding at the outlets.

5. Electrical Grounding.

a. Determining Grounding Conditions. If the outlets contain only two slots and therefore do not provide a ground path, determine if there are moist floors, metal pipes, etc., within 8 feet

(horizontally) of any of the selected sampling locations that could serve as grounding return paths from the samplers.

b. Use of Outlet Adapters. If any of the samplers will be placed within 8 feet (horizontally) of a possible grounding return path, auxiliary conductive grounding paths must be provided. This can be done by means of "2-slot to 3-slot adapters" which have a grounding connection wire. The adapters are plugged into the 2-slot outlets and the grounding connection wires are attached to grounded surfaces to form 3-slot outlets.

c. Finding Grounded Surface. A grounded surface will have to found by using a voltmeter or ohmmeter. Since the retaining screw for the outlet's cover plate is the most convenient place for attaching the grounding connection wire, this is the logical place to begin the search for a grounded surface. If the screw is not grounded, and you must find another surface elsewhere that is grounded to use, you will most likely have to use an insulated conducting wire as an interconnection leading from the adapter's ground wire in order to reach the grounded surface.

6. Locate the circuit protective devices for the outlets and determine if they are appropriate. They must be either fuses or circuit breakers with no more than 15 ampere capacity if protecting outlets for 2-prong plugs, or to more than 20 ampere capacity if protecting outlets for 3-prong plugs.

7. If the electrical wiring is found to be defective, issue citations and either:

a. Postpone sampling until the employer corrects the violative condition(s), or

b. Conduct sampling with battery-powered vertical elutriator sampling systems.

8. If the electrical wiring is in satisfactory condition, consult the employer about the ampere load on the circuits which you plan to use to power the samplers to assure that you will not overload the circuits and trip the breakers or blow the fuses. The samplers draw 4 amperes of current.

9. For an example of the type of information obtained during a walkaround in a picking area of a textile mill, see Chapter V of this manual.

E. Exposure Evaluation.

1. Employer Sampling. Thoroughly evaluate all aspects of the employer's sampling program. Consider the following:

a. Sampling Device. If an equivalent device is used, collect the data used by the employer to support the equivalence determination. (See Chapter II, paragraph E. of this manual.)

b. Calibrations. Evaluate the type, frequency and accuracy of air flow calibrations.

c. Sample Locations. The employer's sample locations must reflect employee exposure.

d. Sampling Time. The employer's samples must be collected for a period of time long enough to reflect employee exposure (a minimum of 6 hours).

e. Air Flow Rate. If a critical orifice is used to control the air flow rate, determine whether the employer's pump draws sufficient vacuum. (See Appendix A of the cotton dust standard.)

f. Weighing Methods. The employer's weighing methods should include enough blank filters and must be technically accurate.

g. Training. Evaluate the training of the person(s) who collect samples for the employer.

h. Calculations. The calculations for dust concentration must be properly done.

i. Reasonableness. The employer's exposure determinations should reflect the conditions observed in the plant during the walkaround.

2. OSHA Sampling--When Required.

a. Verification of Employer's Data. OSHA sampling is required if the employer's data shows exposures below the PEL, and OSHA does not accept the validity of the employer's data without verification.

b. Monitoring Institution of Controls. In every area of the plant where exposures to cotton dust exceed the new PEL, OSHA sampling is necessary at some time prior to the date granted in the standard for instituting engineering and work practice controls to correct such overexposures. This sampling will assist in monitoring the employer's progress in instituting the controls.

c. Documentation.

(1) Regardless of the validity of the employer's data, OSHA sampling is required to document the exposure levels if:

(a) A violation is predicated on employees being exposed above the PEL; or

(b) The levels of exposure affect the classification of a violation, the size of the penalty, or the grouping policy.

(2) Many provisions of the cotton dust standard--such as those relating to medical surveillance and employee education and training (29 CFR 1910.1043(h) and (i))--apply if employees receive ANY exposure to cotton dust, or if ANY cotton dust is present in the workplace. Sampling will be required to support violations of these provisions only insofar as it is needed to document that there is some exposure to cotton dust, or that there is cotton dust present.

3. Sampling Strategy. Prepare a sampling strategy in which the exposure of one or two identified employees is evaluated in each area sampled (such as opening, waste house, picking, carding, drawing, etc.). Chapter VI of this manual provides descriptions of sampling strategies for several

areas of a fictitious plant for demonstration purposes. When developing a sampling strategy, consider the following:

a. Approximately four or five vertical elutriator measurements are used to determine an employee's exposure in most mill operations. In some areas, if an employee's work area is limited, two vertical elutriators will be sufficient.

b. Choose a sampling site based on the following factors:

(1) Select employees who have limited and well-defined work areas. For example, a weaver should be selected for exposure evaluation rather than a loom fixer.

(2) Sampling sites should reflect the exposure of one or two identified employees, as well as approximate exposures of most of the other employees in the area. For example, a sampling site in the middle of the room is preferable to an unoccupied corner or remote part of an area.

(3) Do not locate vertical elutriators in areas with strong air currents (i.e., beside a fan or vent discharge) if this can be avoided.

(4) Avoid locating vertical elutriators in areas where the machines may be shut down during the work shift because of production requirements. Typically, there are certain machines which, due to their age or state of repair, are shut down when production requirements permit.

(5) Vertical elutriators should be placed as close to the employees' work area as possible without interfering with material handling or employee movements.

(6) Most cotton mills have a limited number of 110-volt outlets. .In some cases up to 200 feet of extension cords will be required.

c. Sample sites selected should be marked on the plant sketch.

d. Normally, OSHA will need to sample only on the daylight shift. Sampling on other shifts is at the discretion of the supervisor, and depends For example, if waste-cotton is handled only during the second shift, sampling should be performed.

e. The sampling period will be a minimum of 6 hours, which represents a full-shift exposure to cotton dust.

4. Yarn Manufacturing--29 CFR 1910.1000. To determine compliance in yarn manufacturing with 29 CFR 1910.1000, collect personal total dust samples. Employee exposures sampled with personal samples should be limited to those sampled with the vertical elutriator. Personal sampling is mandatory in yarn manufacturing whenever VE samples are collected, until compliance with 1910.1043(e) is achieved.

5. Dividing Industrial Hygienists' Tasks. Experience has shown that sampling with electrical elutriators can be accomplished most efficiently when working in pairs. The following are

suggestions for splitting the workload (for convenience, the two industrial hygienists will be labeled IH "A" and IH "B"):

a. Both industrial hygienists will transport the equipment, carry it to the sampling site and prepare it for sampling.

b. IH "A" records all sampling notes while IH "B" secures the cassettes, turns on the pump, makes adjustments to the tubing and does other sampling tasks.

c. During the period between checking the vertical elutriator, the work is divided as follows:

(1) IH "A" does the following:

(a) Observes the work locations, duties, and movements of the employee(s) whose exposure is being sampled.

(b) Documents the work patterns of the employee(s) whose exposure is being sampled. This would include time spent in work location and time spent in other locations (such as lunchrooms).

(c) Observes which machines are running and which are down.

(d) Evaluates work practices.

(e) Evaluates respirator use.

(f) Makes notes on all aspects of industrial hygiene programs.

(2) IH "B" does the following:

(a) Takes notes on ventilation systems for the machines in the entire area under study, not just for those located where sampling is being conducted. These notes will include facts such as the number of pickup points and their location, manufacturer of local exhaust ventilation system, when installed, whether the system is designed according to sound local exhaust ventilation principles, etc.

(b) Documents the air cleaning system. This includes:

1 Type of air cleaned--filters, water wash, etc;

2 CFM of air recirculated;

3 Which departments have air cleaning systems;

4 Which departments are served by each air cleaning unit;

5 Particle size removed;

6 Percent of the particles removed;

7 How often filters are changed;

8 When the system was installed; and

9 The manufacturer of the system.

(c) Gathers information on the general ventilation system. This includes:

1 The total air volume exhausted;

2 Room air changes per hour;

3 Direction of air currents in the area;

4 Temperature, humidity, air conditioning, condition of duct work, etc.)

(d) Keeps records on the status of the air recirculation system as a function of time during sampling (i.e., full recirculation, full outside air intake, and percent recirculation).

(e) Evaluates work practices of employees whose exposures are not being sampled.

(f) Evaluates employer's maintenance program for ventilation system. (See Chapter II of this manual.)

6. Determining Exposure Using the Vertical Elutriator. The individual vertical elutriator measurements that are located in the described work area of the employee are averaged arithmetically. This average value is then converted to a time-weighted-average to determine the employee's exposure.

a. The 6-hour sampling period is representative of the full-shift exposure. Therefore, make no adjustment for unsampled time unless the worker is not present in the locations covered by the vertical elutriator measurements (such as in the lunchroom).

b. In most cases, the worker will move about the work area tending to machines. The average of the vertical elutriator measurements will represent the worker's exposure. Chapter VI of this manual contains examples of exposure calculations.

c. In some cases the worker will spend time in several distinct work locations. These cases will require time-weighting. The best example of this is the Abbott winder operation, where

employees spend most of the work shift at one spot, but move about several machines for a short period throughout the day.

F. Evaluation of Industrial Hygiene Programs.

1. At some time during the inspection, an OSHA industrial hygienist must evaluate the industrial hygiene programs required by the standard, such as medical surveillance, training, signs and recordkeeping.

2. Chapter II of this manual provides guidance for interpreting some of the industrial hygiene provisions, and for investigating compliance with them.

G. The Written Compliance Program.

1. The written compliance program is required by March 27, 1981. This program must set forth a schedule whereby the employer will reduce exposures to or below the permissible exposure limit solely by means of engineering and work practice controls, by March 27, 1984.

2. Examine and evaluate the employer's program, and determine whether the schedule for development and implementation of engineering and work practice controls is designed to (and will) achieve compliance with the PEL by March 27, 1984.

3. Until September 1982 any citation for an inadequate compliance program must be approved by the Office of Field Coordination before issuance.

4. Enforcement action will be taken in cases where the compliance program does not project the implementation of these controls by March 27, 1984, or where it appears that the schedule for implementation is so extended to render completion by that date unlikely.

5. In addition, a citation for violation of the compliance program shall be issued where the employer does not meet the scheduled implementation dates in the program.

H. Citations.

1. The recommended violation grouping and classification is described in Chapter IV of this manual.

2. This citation policy was developed to help attain enforcement uniformity within OSHA, and is based upon the nature of the hazard as described in the preamble published in the Federal Register, June 23, 1978. Variations from these recommendations are permitted when the situation is out of the ordinary. The case file must contain documentation of the reasons for the variation.

3. For each well-defined textile mill operation, separate violations of the standard shall be cited for:

o The permissible exposure limit, 29 CFR 1910.1043(c).

o Methods of compliance, 29 CFR 1910.1043(e).

o Work practices, 29 CFR 1910.1043(g).

NOTE: Textile mill operations include, but are not limited to: opening, picking, carding, drawing, combing, roving, spinning, slashing, winding, warping, weaving and the waste house.

4. For yarn manufacturing, 29 CFR 1910.1000 applies in addition to 29 CFR 1910.1043. Where the PEL under 29 CFR 1910.1000 is exceeded, and all technically feasible engineering and administrative controls have not been instituted, citations for violations of 29 CFR 1910.1000(a)(2) and 29 CFR 1910.1000(e) will be issued. (See Chapter III of this manual for additional guidance.)

CHAPTER II

INTERPRETATIONS AND INSPECTION PROCEDURES

A. Purpose. This chapter provides guidelines for investigating compliance with selected provisions of the cotton dust standard, and provides interpretations of the standard.

B. Scope. This chapter does not systematically explain each provision of the standard, but rather selected provisions about which many questions have been raised, or that have not been previously addressed by other directives. The standard itself should be at hand while reading this material.

C. 29 CFR 1910.1043(b) Definitions--"Washed Cotton".

1. If, during an inspection, an employer claims exemption from the cotton dust standard because washed cotton is processed, obtain the following:

a. The washing parameters.

b. Information gained from employee interviews concerning symptoms of byssinosis.

2. For assistance with the analysis, send this information to the National Office, Directorate of Technical Support, through proper channels.

3. In order for dyed yarn to be considered washed cotton, it must have been thoroughly washed in hot water.

D. 29 CFR 1910.1043(c) Permissible Exposure Limits--Novel Work Shifts. The permissible exposure limits for cotton dust shall not be adjusted for novel work shift schedules. The work

category for cotton dust, as found in the IHFOM, page II-48, is changed from category 4 to category 1C.

E. 29 CFR 1910.1043(d) Exposure Monitoring and Measurement.

1. Monitoring With An Equivalent Sampler. In place of the vertical elutriator, employers are permitted to use an alternate sampling device, provided that the employer establishes equivalency as specified by the standard. To investigate compliance with this provision, do the following:

a. Obtain copies of all data and reports used by the employer to establish equivalency.

b. Obtain copies of the employer's calibration and maintenance procedures and schedules with applicable data.

c. Obtain assistance on equivalency determination by sending copies of the materials obtained through the Office of Field Coordination to the Directorate of Federal Compliance and State Programs.

2. Evaluating Employer's Sampling and Monitoring. Although the employer is not required to sample using the same strategy prescribed for OSHA in this instruction, the employer's data must be representative of all employees exposed to cotton dust. The following are guidelines for evaluating the adequacy of the employer's monitoring program:

a. There is no action level for cotton dust sampling. Monitoring is required in each place of employment in which cotton dust is present.

b. Separate exposure determinations are required for each shift.

c. Evaluate the data collected during the inspection, particularly that described in Chapter I, E. 1., of this manual.

d. Determine the adequacy of the employer's sampling location. This determination requires the use of professional judgment. Document the reasons for accepting or rejecting the company's sampling locations.

e. Even though the employer may have selected proper sampling locations, the results may not represent employee exposure because the instruments were not used properly.

(1) Refer to Chapter I, E. 1 and Chapter VII of this manual, and Appendix A of the standard, for correct procedures for collecting vertical elutriator samples.

(2) For instruments other than vertical elutriators, use good scientific techniques and the manufacturer's recommended operating instructions to evaluate the employer's procedures. An

alternate instrument can be capable of supplying equivalent results to the vertical elutriator, but may not, in fact, give equivalent results because the instrument is not used properly.

f. Compare OSHA exposure determinations to the employer's exposure determinations.

F. 29 CFR 1910.1043(e)(4) Mechanical Ventilation. The following guidelines will be useful to assess compliance with this provision:

1. Review a copy of the employer's written program, if there is one.

2. Review the criteria used by the employer to assess the adequacy of ventilation performance, and the criteria used to signal that corrective action is required, such as the condition of duct work and the pressure at various locations in the duct work.

3. Review records of measurements. The standard requires measurements at least every 6 months.

4. Interview plant personnel to determine what action is taken if ventilation is defective.

5. Find out how long it takes for a defective system to be worked on after it has been diagnosed as defective.

6. Ask the employer to point out some of the locations used to make the ventilation measurements.

NOTE: Ventilation measurements taken at elbows are unacceptable.

7. Ask the employer to describe the mechanisms for measuring ventilation, e.g., magnehelic gage, monometer pilot traverse, etc.

8. Take appropriate notes to document the procedures and deficiencies.

G. 29 CFR 1910.1043(f) Use of Respirators.

[Reserved.]

H. 29 CFR 1910.1043(g) Work Practices. The following are some guidelines for investigating compliance with the work practices provision:

1. Obtain a copy of the work practice program.

2. During the inspection, investigate and document whether:

(a) The employees follow the work practices.

(b) The work practices are adequate.

3. If there are work practices that are not used, but which may be applicable, document or reference them in the notes.

NOTE: Mail a copy of the employer's written program to the National Office, Office of Compliance Programming, through the Office of Field Coordination. Copies of selected programs will be circulated to the field for information to be used for evaluating other work practice programs under investigation.

I. 29 CFR 1910.1043(h) Medical Surveillance. A complete inspection for the cotton dust standard shall include investigation of the medical surveillance program.

1. OSHA Access to Medical Records. Provisions at 29 CFR 1910.20 and 29 CFR 1913.10 define OSHA's right of access to the employer's medical records, and describe the procedures for handling such access. No special instructions for applying these provisions to cotton dust inspections are offered here. Instead, refer to the OSHA Instructions specifically written for implementing 1910.20 and 1913.10.

2. Extent of Medical Surveillance Investigations. Industrial hygienists shall systematically investigate all provisions of 29 CFR 1910.1043(h), whether or not they are discussed below.

3. Opportunity for Employee Representative to Accompany Compliance Officer.

a. The compliance officer will normally interview various parties (management, physicians, nurses, industrial hygienists, employees) and examine medical records to determine if the employer is complying with the medical surveillance requirements of the standard. Because those activities are part of the physical inspection of the workplace, the compliance officer must give the employee representative an opportunity to accompany him or her during this part of the inspection.

b. The only restriction on the employee representative's participation would be during the examination of personally identifiable medical records; and then only in the case of records for which the employee representative has not been given written consent for access by the employee involved.

4. Evaluation of 29 CFR 1910.1043(h)(1)(ii)--Physician's Supervision. This provision requires that all medical examinations and procedures be performed by or under the supervision of a licensed physician. Document whether the physician exercises adequate supervision over the program. In investigating the adequacy of the physician's supervision, consider the following:

NOTE: Where a physician is regularly present in the plant and exercises ongoing personal observation of the employees' work and medical conditions, it is likely that the physician does exercise adequate supervision of the program as required by 29 CFR 1910.1043(h) (1)(ii). In such cases, exact adherence to the considerations listed below may not be necessary.

a. The physician must have a system of checks to ensure that pulmonary function tests are performed correctly, calculations of lung function parameters from spirograms of the tests are accurate and schedules are met. A system of checks would consist of elements such as:

(1) Selecting and reviewing (on a random or some other predetermined basis) spirograms and the calculations of lung function parameters.

(2) Following up any deficiencies that such reviews surface with corrective action; e.g., by meeting with and instructing the personnel who are administering the pulmonary function tests and calculating lung function parameters.

(3) Making occasional on-site visits while pulmonary function tests are being administered.

b. The physician must have provided the nurse or technician with instructions on action to take, based on certain pulmonary function test results and answers given on the medical questionnaire. For example, this would include criteria for when a physician (not necessarily the supervisory physician) should personally examine an employee.

c. Although the physician need not personally examine every employee during each physical examination, in a properly supervised medical surveillance program, the supervising physician prescribes when employees must be personally examined by a physician. Document whether the physician prescribes that a physician must personally examine employees who:

(1) Have bronchitis.

(2) Have bysinnosis grade 1 or 2 as determined from the questionnaire.

(3) Have dyspnea, grade 3 (as determined from the pulmonary questionnaire).

(4) Have no evidence of chronic ventilatory impairment (that is, the FEV1/FVC ratio is greater than 0.75), but the decrement in FEV1 is greater than 10% (as measured according to 29 CFR 1910.1043(h)(2)(iii)).

(5) Have evidence of slight to moderate irreversible impairment of ventilatory capacity (e.g., the FEV1/FVC ratio is between .60 to .75) and the decrement in FEV1 is greater than 5% (as measured according to 29 CFR 1910.1043(h)(2)(iii)).

(6) Have special health problems such as cardiovascular disease.

d. The determination that a medical surveillance program is not properly supervised is a qualitative judgment, based on the information gathered during the inspection. A citation may not be appropriate for some minor deficiencies in supervision of the medical surveillance program, which can be resolved through notifying the employer by letter. Before any citation for violation of this provision is issued, the industrial hygienist (through the Regional Office) must

consult with a National Office Medical Officer, who will provide assistance on making that judgment.

5. Initial Medical Examination. The following interpretations are provided to clarify several points related to the initial medical examinations required by 29 CFR 1910.1043(h)(2).

a. Triggering level. 29 CFR 1910.1043(h)(2) requires that the employer shall provide each employee who is or may be exposed to cotton dust with an opportunity for medical surveillance.

(1) This means that medical surveillance is required independently of the magnitude of cotton dust air concentration levels, and depends upon an employee exposure to any detectable amount of cotton dust as measured by the vertical elutriator.

(2) Employees exposed to cotton dust for a small part of the day must be given an opportunity to participate in the medical surveillance program. Similarly, employees who are exposed routinely to cotton dust, but not every day, must be given an opportunity to participate in the medical surveillance program.

b. Medical Examination Prior to Initial Assignment. 29 CFR 1910.1043(h)(2) requires that, for new employees, the medical examination shall be provided prior to initial assignment to jobs where they will be exposed to cotton dust. Some employers may not have the resources at the plant or in the nearby community to provide the examination. The usual procedure for such employers is to contract out the medical program to a medical service that periodically visits the plant with a mobile unit having the necessary equipment. When assessing the timeliness of the initial medical examination in such circumstances, the industrial hygienist shall consider the following:

(1) It is crucial that the examination be provided prior to initial assignment if the employee will be exposed above the permissible limit and have to use a respirator.

(2) The fact that the employer must contract out the medical surveillance program with a mobile medical service is no justification for not providing the examination until after an employee is assigned to a job where he/she is exposed to cotton dust. It is OSHA's position that the employer can provide timely examinations through alert management and advance planning.

6. Questionnaire Interpretations. 29 CFR 1910.1043 (h)(2)(ii) requires that the standardized questionnaire must be a part of the medical surveillance program to measure the subjective respiratory changes in workers exposed to cotton dust. The questionnaire shall not be revised or rearranged. When assessing compliance with this provision, the industrial hygienist (following the provisions of 29 CFR 1910.20, 29 CFR 1913.10 and the OSHA instructions for implementing these provisions) shall:

a. Investigate to determine whether the questionnaire is given in a timely and proper manner, and to the proper employees. This can be done by interviewing the persons who conduct the questionnaire survey and employees, and by examining the records.

b. Interview the employees in privacy and assure them: that the information they provide will be kept confidential if they wish it to be.

7. Periodic Examinations. 29 CFR 1910.1043 (h)(3)(ii) (c) requires periodic examinations every 6 months where, in the opinion of the physician, any significant change in questionnaire findings, pulmonary function results, or other diagnostic tests has occurred. When investigating compliance with this provision, the industrial hygienist shall:

a. Determine if any employees have been placed in this category.

b. Interview medical personnel to find out criteria used, if any, to place an employee in this category; and review and copy any written procedures as necessary.

c. Consider that some employees may be covered by this provision based upon the physician's medical opinion. Some situations that may indicate a need for a physical examination every 6 months are listed in I. 4. c. of this chapter.

8. Frequency of Physician's Written Opinion--29 CFR 1910.1043(h)(5).

a. On each occasion an employee takes a medical examination that the standard requires the employer to offer, the employer must obtain and furnish the employee with a copy of a written opinion from the physician containing the elements delineated under 29 CFR 1910.1043(h)(5).

b. Even where the physician does not personally examine all employees, he will be in a position to give a written opinion for all employees examined if he is adequately supervising the medical program. Accordingly, if an employer who is in violations of 29 CFR 1910.1043(h)(5) claims that the physician cannot provide written opinions for all employees who must be given examinations, this merely indicates inadequate supervision by the physician and a concurrent violation of 29 CFR 1910.1043(h)(1)(ii), q.v.

9. Content of Physician's Written Opinion--29 CFR 1910.1043(h)(5). The assessment of increased risk of health impairment by the examining physician is an integral part of the medical surveillance program; this requirement is common to virtually all OSHA health standards. Employers will be in violation of 29 CFR 1910.1043(h)(5)(i)(a), (b) and/or (c) if the physician they use does not give a complete, fully developed opinion which is based on evaluating and weighing all relevant information received.

a. Examination and Test Results. In investigating whether the content of the physician's written opinion satisfies 29 CFR 1910.1043(h)(5)(i)(a), consider that the results of the medical examinations and tests are interpreted to include:

(1) The byssinosis grade according to Schilling's system.

(2) The forced vital capacity (FVC) prior to exposure to cotton dust on the first day of the workweek.

(3) The forced expiratory volume in 1 second (FEV1) prior to exposure to cotton dust on the first day of the workweek. (4) The percentage deviation from predicted FVC and FEV1 values.

(5) The FVC and FEV1 4 to 70 hours after the onset of the employees' exposure to cotton dust on the first day of the workweek.

(6) Any significant changes from previous examination results.

(7) The dyspnea grade.

(8) An identification of any abnormal examination results.

(9) Diagnosis of a condition or illness.

b. Health Risks and Recommended Limitations. In investigating whether the physician's written opinion satisfies 29 CFR 1910.1043(h)(5)(i)(b) and (c) some important points to bear in mind are: .

(1) When developing an opinion as to whether an employee has any detected medical conditions which would place him at increased risk of material health impairment from exposure to cotton dust, and/or determining whether to recommend any limitations upon the employee's exposure to cotton dust, the physician must evaluate and weigh:

(a) The results of the medical examination and tests.

(b) The employee's subjective symptoms as determined through the questionnaire.

(c) Information from the employee's previous medical examinations (this is the information that 29 CFR 1910.1043(h)(4)(v) requires the employer to provide).

(d) The employee's medical history.

(e) Other medical information supplied by the employee.

(f) The employee's exposure level of anticipated exposure level.

(2) When determining whether to recommend limitations upon the employee's use of respirators, the physician must:

(a) Identify and evaluate the inhibiting effects of any afflictions such as:

o Sinusitis.

o Facial dermatitis.

o Chronic obstructive pulmonary disease (byssinosis, chronic bronchitis).

o Dyspnea.

o Cardiovascular disease.

o Claustrophobia.

o Hyperventilation.

o Other respiratory disease.

(b) Weigh any second physician's opinion that may be provided that the employee cannot wear a respirator.

(c) Take into account the physical exertion required by the employee to perform his/her job.

(d) Take into account the duration and frequency that the employee will be required to use the respirator.

(3) Diseases correlating with answers to certain questions in the Respiratory Questionnaire for textile workers, Appendix B-I, are:

Disease Employee Response to Questionnaire.

Bronchitis o Yes to question 38 as a minimum.

Byssinosis o Yes to question 47(1)= Grade 1/2

o Yes to question 35(1)= Grade 1/2

o An increase in the Grade of Breathlessness

(from questions 51 through 60) = Grade 1

o Yes to question 47(2) = Grade 1

o Yes to question 47 (2 + 3) or (2 + 3 + 4) or (2 + 3 + 4 + 5) or (2 + 3 + 4 + 5 + 6) = Grade 2

Dyspnea o This is to be determined from only those dyspnea questions, 51 through 55, which are logged as question 56.

3. Until September 1982 any citation for an inadequate compliance program must be approved by the Office of Field Coordination before issuance.

4. Enforcement action will be taken in cases where the compliance program does not project the implementation of these controls by March 27, 1984, or where it appears that the schedule for implementation is so extended to render completion by that date unlikely.

5. In addition, a citation for violation of the compliance program shall be issued where the employer does not meet the scheduled implementation dates in the program.

Paragraph Deleted

DELETED

J. 29 CFR 1910.1043(1), Observation of Monitoring.

1. For the purposes of this paragraph, "designated employee representatives" include:

a. Employees of the workplace selected by their co-workers to be employee representatives.

b. Officials of a labor union local that serves as a bargaining unit for employees at the workplace.

c. The business agent for the union local.

d. Industrial hygienists, physicians, nurses, safety professionals, and the officials employed by the National Office(s) of the local(s).

2. Observation of monitoring rights include:

a. The right to receive, upon request, sufficient advance notice to allow a complete observation of the monitoring. An employer who does not honor this request violates 29 CFR 1910.1043 (1)(1), in that he fails to provide an opportunity to observe the monitoring.

b. The right to accompany the employee during all phases of sampling and analysis.

c. The right to ask employees working in the area where monitoring is being performed questions pertinent to establishing how typical the present conditions are. An employer who does not permit an observer of the monitoring to question employees in this regard violates 29 CFR 1910.1043 (l)(3)(iii), in that the is preventing the observer from recording the full results obtained. The values of the airborne cotton dust concentrations at the place of exposure are not meaningful unless they are accompanied by notations indicating how typical the conditions were when these values were being determined.

d. The right to an explanation of how the sample results (perhaps from several vertical elutriators) are translated into employee exposure values.