

U.S. DEPARTMENT OF LABOR
Occupational Safety and Health Administration
WASHINGTON, D.C. 20210



Office of the Assistant Secretary

OSHA PROGRAM DIRECTIVE #200-47

TO: Regional Administrators

Subject: Industrial Hygiene Field Operations Manual

1. Purpose

To establish an Industrial Hygiene Field Operations Manual.

2. Directive Affected:

None

3. Information

On June 28, 1976, Chapter XIII of the Field Operations Manual was revised to transmit the updates in the Industrial Hygiene Inspection policy. The new Chapter XIII indicates that other documents will be provided as support that include detailed instructions for routine industrial hygiene functions. This directive establishes a new manual to contain future policy related specifically to industrial hygiene.

4. Action

The Industrial Hygiene Field Operations Manual is established as a looseleaf notebook. As entries and updates are provided the changes shall be made immediately. The manual will be loosely structured until the materials begin to develop shape. At this time (approximately one year) a formal printing will be made and the book will be distributed.

The initial documents contained in the Industrial Hygiene Field Operations Manual are as follows:

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CHAPTER IX
DETERMINATION OF COMPLIANCE
FOR AIR QUALITY AND NOISE STANDARDS

The Occupational Safety and Health Administration determines compliance for air quality (and noise) standards based upon one or more days full-shift time weighted average concentration measurements and professional judgement of the data and conditions that exist at the plant. The following conditions must be met before citations are issued against air quality standards 1910.1000 and 1910.1001 and noise standard 1910.95 as applicable.

1. An exposure to an employee must occur. This requires the use of personal sampling techniques.
2. For 8-hour exposures, the time weighted average concentration must be determined. Sampling devices that monitor full-shift exposures must operate for a minimum of 7 hours. This implies that the concentration is calculated using the air volume sampled during the shift as long as the sampling time exceeds 7 hours. Spot samples must be taken throughout the work shift to represent at least 7 hours of exposure and to represent periods of exposure for time weighted average calculations. When the actual work shift exceeds 8 hours, an 8 hour time weighted average must be calculated using the results of a 7 or 8 hour sampling

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period. This value is compared to the standard for compliance determination.

3. Materials in Table Z-1 of standard 1910.1000 preceded by a "C" have maximum peak ceiling limits which are never to be exceeded to which an employee can be exposed. Generally a 15-minute sampling period should be applied to ceiling measurements (except for imminent danger situations where immediate escape from the atmosphere is necessary).

4. Materials in Table Z-2 of standard 1910.1000 have maximum peak ceiling limits plus ceiling limits with permissible exposure times. The maximum peak ceiling limits are, in effect, the ceiling limits with permissible exposure times. Generally a 15-minute period of samples are required to sample accurately. Exceptions are beryllium and formaldehyde which have 30 minute maximum duration limits for the acceptable ceiling concentrations. The other exceptions are imminent danger situations where immediate escape from the atmosphere is necessary.

5. The 8-hour time weighted average applies to any 8-hour shift of the work week.

6. The cumulative exposure computation formula must be and shall only be used for materials that have additive harmful effects on the human body. A complete list of contaminants having additive effects is shown in Figure 1.

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7. A minimum one seven to eight hour sample for full-shift assessment, several spot samples that represent on a time weighted average a full-shift assessment, or one 15-minute sample for a ceiling assessment are the basis of issuing a citation. The measurement(s) must exceed the allowable limits by the statistical factor for that method of measurement shown in Table 2. This concept is discussed in more detail below.

8. All industrial hygiene samples must be collected and analyzed using OSHA standard methods.

9. The citation will not be issued on the results of the sampling alone. Professional judgement of the data and conditions must confirm the sampling results. The following are guidelines to be weighed.

- (1) The CSHO (I.H.) past experience must indicate that the sampling results are consistent with observation of the worksite.
- (2) The sampling results in the plant should correlate with each other. For example, does the occupation that is expected to be dusty have higher dust concentrations measured than those expected to be less dusty.

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- (3) The sampling results should reasonably correlate with previous measurements made by OSHA, the company, or labor, taking into account variations due to weather, production, breakdowns, etc.

10. Ventilation measurements should be consistent with sampling results and should indicate inadequate controls.

11. Swipe sampling results are used as a general indication of housekeeping, air quality and exposure. The results of swipe samples shall not be a quantitative measurement of compliance, but an indicator, such as an area air quality sample.

12. A representative number of employees with the highest exposure must be sampled. The area sampling should be sufficient to define the environment, the unit operation or unit process under investigation for identification of sources.

13. Although it is not essential that the CSHO continuously observe each employee being monitored, the CSHO must account for each employee's movements and duties in each area of the plant. The CSHO shall remain at the workplaces while the samples are being collected. Areas in which personnel that are being monitored work must be surveyed during the walkaround and representative area samples collected.

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ite 14. Each personal exposure sampling device must be checked at least every two hours. Employee movements, job descriptions while working in each area (including the time the employee works out of sight) and checks on equipment shall be written in the inspection notes.

15. As a rough guide, one industrial hygienist should be able to collect at least 5 full-shift personnel samples and 5 full-shift area samples per day.

e 16. The factors to be applied to full-shift time weighted average concentrations have been developed because legal considerations require a degree of certainty that the standard is violated when a citation is issued. A citation shall not be issued unless the permissible levels are exceeded by the factor listed in Table 2 based upon a single day's sampling results.

s. The employee must also be protected. Therefore, the factor can be applied to the allowable limits to determine a lower limit. Measurements below the limit indicate with certainty that overexposure did not occur.

17. If measurements fall in the range between the lower limit and upper limit where no decision regarding compliance can be made, additional samples shall be collected until a decision can be reached.

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When inconsistencies exist in the data as evaluated in 9 and 10, additional samples shall be collected until a decision can be reached.

No more than five replicate samples should be taken of any time weighted average measurement.

Table 2 Factors to be applied to full-shift time weighted average concentrations to ensure the allowable limits have been exceeded.

<u>Measurement</u>	<u>Factor¹</u>
Total Dust-Gravimetric	1.10
Metal Dust and Metal Fume	1.15
Respirable Silica Dust	1.25
Charcoal Tube (8-hour TWA)	1.15
Noise (Dosimeter)	1.30
Impinger or Bubbler (8-hour TWA)	1.15
Detector Tube (8-hour TWA) ²	1.30
Detector Tube (Ceiling)	1.30

Note: These apply regardless of the number of samples used to determine the time weighted average.

Note 2: Detector tubes are not to be used for compliance with 8-hour exposure unless special allowances are made by the National Office.

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ERRATA SHEET

Chapter IX - DETERMINATION OF COMPLIANCE FOR AIR QUALITY
AND NOISE STANDARDS

Page 4. On line 17, in paragraph 13, change "CSHO" to
CSHO and IH"

Page 4. On line 19, in paragraph 13, change "CSHO" to
"CSHO and IH"

Page 4. On line 20, in paragraph 13, change "CSHO" to
"CSHO and IH"

Page 6. On lines 18, and 19, eliminate the note that reads
as follows: "These apply regardless of the number
of samples used to determine the time weighted
average."

Page 6. On line 20, in note 2, eliminate the number "2"

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OSHA/ACGIH SUBSTANCE TOXICITY REPORT
*** FILE SORTED BY SUBSTANCE ***

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FILE# NO CODE SUBSTANCE	PHY ST	OSHA PEL PPM	OSHA PEL MG/M3	ACGIH PEL PPM	HEALTH HAZARD CATEGORY	HEALTH HAZARD CLASSIFICATION
15 0175 AMMONIUM CHLORIDE	S	NONE	NONE	A -	1.0 MILD IRRITATION - EYE, NOSE, THROAT	0
15 0185 AMMONIUM SULFAMATE	S	-	15	A -	1.0 MILD IRRITATION - EYE, NOSE, THROAT	0
14 0190 N-AMYL ACETATE	I	100	525	100	525 MODERATE IRRITATION - EYE, NOSE, THROAT	0-UP TO 2XPEL S-ABOVE 2XPEL
14 0191 AMYL ACETATE-SEC	I	125	650	125	650 MODERATE IRRITATION - EYE, NOSE, THROAT	0-UP TO 2XPEL S-ABOVE 2XPEL
12 0220 ANILINE - SKIN	I	5	19	5	19 METHEMOGLOBIN FORMATION/ACUTE TOXIC (SYSTEMIC) EFFECTS	0-UP TO 2XPEL S-ABOVE 2XPEL
3 0225 ANISIDINE (O.P - ISOMERS)	I	-	0.5	-	0.5 METHEMOGLOBIN FORMATION/CUMULATIVE TOXICITY	0-UP TO 3XPEL S-ABOVE 3XPEL
3 0230 ANTIMONY & COMPOUNDS (AS SB)	S	-	0.5	P HNDL .5,PROD .05	CUMULATIVE LIVER AND HEART DAMAGE	S
3 0235 ANTU (ALPHA NAPHTHYL THIOUREA)	S	-	0.3	-	0.3 CUMULATIVE ENDOCRINE (THYROID AND ADRENAL) DAMAGE	S
16 0240 ARGON	G	NONE	NONE	A F	- SIMPLE ASPHYXIAION	0-IF OXYGEN IS GREATER THAN 14% BY VOL
2 0260 ARSENIC & COMPOUNDS (AS AS)	S	-	0.5	P HNDL .25,PROD .05	CUMULATIVE SYSTEMIC POISON/SUSPECT CARCINOGEN	S
4 0270 ARSINE	G	0.05	0.2	0.05	0.2 ACUTE SYSTEMIC TOXICITY	S
1 9020 ASBESTOS (ALL FORMS)	S	STD 1% 0.1001	2	2 FIBERS/CC	ASBESTIOSIS/CANCER	S
2 0290 ASPHALT (PETROLEUM) FUMES	FUM	NONE	NONE	A -	5 GOOD HOUSEKEEPING PRACTICE/SUSPECT CARCINOGEN	S

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