

54-219

# Monsanto

ENVIRONMENT, SAFETY & HEALTH

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The Docket Office  
Docket H-049  
Room N2625  
U.S. Department of Labor  
Occupational Safety and Health Administration  
200 Constitution Avenue N.W.  
Washington, DC 20210

Dear Sirs:

Monsanto Company appreciates this opportunity to comment on OSHA's proposed revision to existing respiratory protection standards.

Monsanto is a science-based company involved in businesses that improve the quality of life. Monsanto's 29,000 employees worldwide devote their time and efforts to discovering, manufacturing and marketing agricultural products, performance chemicals used in consumer products, prescription pharmaceuticals, and food ingredients. Some of Monsanto's well-known brands include Roundup and Lasso herbicides, Ortho lawn-and-garden products, Wear-Dated carpet, Saflex plastic interlayer, Calan calcium channel blocker, and NutraSweet Brand sweetener. Monsanto, founded and based in St. Louis, had sales of more than \$8 billion in 1994.

Monsanto Company supports in concept the proposal to revise the Occupational Safety and Health Administration's regulations dealing with respiratory protection. Many things have changed since the first issuance of respiratory protection regulations and the existing piecemeal approach to addressing new opinions, information and technology in substance specific standards does not serve anyone's purpose well. It results in inconsistencies in the use of respirators when applied to multiple substance specific standards and other 1910.1000 substances. In particular, Monsanto supports the following general issues addressed in the proposed revisions:

- \* the inclusion of requirements for a written respirator program as well as a qualified administrator to provide overall management of the program,

- \* the periodic training of respirator users because it is critical to their understanding and proper use of the equipment as well as their immediate supervision so that they understand issues associated with its use,
- \* the periodic fit testing of all tight-fitting respirators using consistent protocols ensures that the user of respiratory protection can obtain a proper fit, however, we do not agree that there is data to support increasing the frequency of those fit tests based upon exposure to a particular substance,
- \* the need for medical evaluations of all respirator users using the procedures similar to those outlined in alternative 3 with some minor changes. We feel that the use of screening questionnaires is a better method of concentrating medical examinations on the respirator users that truly need it rather than establishing a duration of use threshold such as 5 hours per week, and
- \* the continued use of exposure assessments to ensure that respirators are properly selected.

However, in reading the proposal, we find that OSHA has not integrated the latest information on respiratory protection. It appears that in general, technical studies completed since 1986 have not been included in OSHA's justification for various proposed requirements. This perception is supported by the lack of any proposed changes to some of the General Industry substance specific standards issued since then such as Benzene (1910.1028 issued 9/11/87), Formaldehyde (1910.1048 issued 12/13/88), Methylenedianline (1910.1050 issued 5/27/92), Cadmium (1910.1027 issued 9/14/92), as well as the Construction (1926) substance specific standards, the Shipyard standard for Asbestos (1915.1001 issued 8/10/94) and the Agriculture standard for Cadmium (1928.1027 issued 4/23/93).

We would have expected that OSHA would have included more current information in the development of the proposal. In many cases the ANSI Z88.2-1992 standard contains language that is more complete and accurate than OSHA's proposal. We support using the ANSI Z88.2-1992 standard as the basis for OSHA's proposed rule. The ANSI Z88.2-1992 standard contains the latest knowledge and experience in determining what is necessary to run a respirator program. ANSI standards undergo a peer review process that requires the committee to address substantive comments. The ANSI standard is a consensus of opinion and science on what is appropriate for a respiratory protection program.

We believe that fit testing specifications are useful, but they should not be written such that they exclude new and existing technology. Explicitly mentioning terminology based on older technology, such as those referring to exposure chambers, particle generators and counters, could exclude available and accepted technology such as a condensation nuclei counter (TSI PortaCount Plus) and controlled negative pressure (Dynatech Nevada FitTester model 3000). The regulation should not be written in a way that discourages any additional technical improvements.

Additionally, while the publication of mandatory fit testing protocols are appropriate, the details as proposed are excessive. We recommend that only the exercise regimen, preparation of test and screening agents, and the general equipment needed to conduct the fit test be part of the mandatory appendix. The other information can be part of a non-mandatory appendix used for guidance.

We also recommend that the exercise regimen be modified by the elimination of the grimace exercise. It is designed to test the ability of the respirator to reseal on the user's face properly. A person being fit tested is expected to fail this test exercise as recognized by OSHA's direction in the quantitative fit factor calculation where you do not utilize the data from this exercise when calculating the average fit factor. In a qualitative test, it may mean that the individual being fitted might not be able to recover their ability to properly sense a seal failure in the subsequent exercises performed for the fit test.

We also do not support the need to fit test respirators in triplicate when performing quantitative fit testing. Since a respirator user cannot use the respirator beyond the assigned protection factor, it is essentially a pass/fail test. As such, there is no difference in application of a quantitative fit test and a qualitative fit test. This issue of triplicate quantitative fit testing made sense as proposed in the ANSI Z88.2-1980 section 6.13 where an individual's lowest established fit factor (protection factor) was used as part of the review of all the lowest fit factors achieved by a group of users to determine what should be applied to the overall group. However, since the assigned protection factors are now considered fixed for everyone, there is only the need to pass a single test. This test already requires the wearer to achieve a safety factor of ten times the respirator's assigned protection factor before being considered to have an acceptable fit. Additional testing is just a waste of time, resources and money and should not be required.

On the subject of respirator selection, OSHA should not specify the number of manufacturers/models which should be made available. This should be a performance specification rather than a minimum fixed requirement. Since the intent is to have comfortable good fitting respirators, employer flexibility should be permitted due to varying sizes of respirator user populations. Additionally this requirement covers SCBAs, and as such, would dramatically increase the cost of compliance without permitting alternate solutions to address the issue of comfortable good fitting respirators. Application of the multiple manufacturer requirement to SCBAs will by itself invalidate the regulatory impact analysis based upon 10 year old data (Centaur Associates, Inc. "Preliminary Regulatory Impact Analysis of Alternate Respiratory Protection Standards," 1984). A single SCBA costs more than the highest category of total cost of all revisions per establishment (\$2409 SIC 22 Textile Mill Products) as estimated by OSHA.

In reviewing the OSHA's regulatory impact analysis for the Chemical and Allied Products SIC 28, we find that the estimate of \$627 per site to be grossly inaccurate. A sample of our facilities indicates that there are an average of 220 respirator users per location, with 20% using respirators more than about 5 hours per week and 62% being trained on use of an SCBA. The locations primarily using only 1 manufacturer for SCBAs and have an average of 54 SCBAs. Labor costs were estimated to be \$20 per hour not including benefits. Medical evaluation costs were estimated to be typically \$100 per exam. Using this information, the annual cost of the proposed requirements would range from a minimum of \$16,000 for fit testing using only QLFT procedures and medically testing only 20% of the respirator users to \$46,000 for fit testing using only QNFT procedures and medically evaluating all users. It would also cost \$160,000 to provided double the number of SCBAs in each location so that the proposed multiple manufacturer requirement is met wherever SCBAs were available. These annual costs do not include the costs of benefits, increased management of the fit testing, training and medical review programs, nor the reoccurring costs to maintain and eventually replace all these SCBA which could easily double the annual costs.

OSHA has chosen to use the assigned protection factors that are listed in the NIOSH respirator decision logic (RDL). OSHA chose the NIOSH values rather than the more recent values listed by the ANSI Z88.2(1992) since "... some of the provisions of the ANSI standard appear to contradict specific information which OSHA considers reliable. In particular, the ANSI recommended protection factors disagree substantially with recommendations by NIOSH."

The ANSI committee (Z88.2-1992 published August 1992) had available to them more current respirator studies than NIOSH in the development of their RDL (published in September 1987). This has resulted in assigned protection factors that are different between these groups. Additionally, while the current NIOSH assigned protection factors were published without any public input, the ANSI Z88.2(1992) standard's assigned protection factors were accepted after a peer review process.

Examining the differences between the assigned protection factors of ANSI and NIOSH, there is a difference in definition of the types of respirators. For PAPRs and continuous flow respirators, NIOSH lists two types: loose fitting and tight fitting. ANSI on the other hand lists four types: loose fitting facepieces, helmets/hoods, half mask and full face pieces.

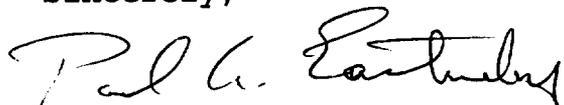
Looking at the studies referenced by NIOSH in the RDL, there are no studies listed for what ANSI calls a helmet/hood. All the studies listed are with the ANSI defined loose fitting facepiece. If we define the NIOSH loose fitting class as a loose fitting facepiece, then ANSI and NIOSH agree on the assigned protection factor for both PAPRs and continuous flow respirators.

Reviewing the studies referenced by NIOSH for tight fitting respirators all but one is what ANSI defines as a half mask. The study that ANSI defines as a full facepiece, was the one conducted in a silica bagging operation (Myers, W. R. and M. J. Peach: Performance Measurements on a Powered Air-Purifying Respirator Made During Actual Field Use in a Silica Bagging Operation. Ann. Occup. Hyg. 27(3):251-259 (1983)). The authors' reported the potential for reduced performance due to possible disturbance of the seal between the blower housing and the filter allowing unfiltered air to enter the blower. This possibility was supported by the authors' observation of silica dust inside the motor blower housing. Thus this study may not predict actual performance of the PAPR. If the study by Myers and Peach is not used, the remaining studies for half mask PAPRs support an assigned protection factor of 50 as listed by ANSI.

In summary, the assigned protection factors listed by NIOSH are not well documented. In several cases, the NIOSH assigned protection factors contradict what one would expect based on construction differences between types of respirators. Half mask and full facepiece continuous flow and powered air purifying respirators show no difference in performance rating according to NIOSH while they do in negative and pressure demand modes. We believe the ANSI Z88.2-1992 standard's assigned protection factors are the appropriate values for OSHA to use in the respiratory protection standard.

The attached comments address specific issues identified in the proposed changes. We appreciate the opportunity to submit these comments in an effort to improve OSHA's proposal as published in the Federal Register on November 15, 1994.

Sincerely,

A handwritten signature in cursive script that reads "Paul A. Easterday".

Paul A. Easterday, CIH  
Director Industrial Hygiene

(a) Scope and Application

Monsanto Company's position is that any voluntary use of respiratory protection should not be covered by the proposed revisions to the OSHA respirator standard. While Monsanto may decide to voluntarily require employees to use a respirator to reduce exposures or an employee may voluntarily choose to wear a respirator for personal reasons, this use should not be subject to potential citation by OSHA. We do not believe that it is appropriate for OSHA to be able to cite one employer for voluntarily using a respirator to reduce exposures to chemical x while OSHA cannot cite another employer who does not permit employees to use a respirator for the same level of exposure to chemical x.

OSHA has expressed its intent in the preamble on page 58895 column 3 to interpret the term "necessary" in (a)(2) to include employee exposure situations where an OSHA PEL is exceeded or they warrant a 5(a)(1) citation under the OSH Act. While use of the 5(a)(1) citation may include substances that have occupational exposure limits established by groups other than OSHA, not all available occupational exposure limits would qualify as a Section 5(a)(1) recognized hazard ("Each employer shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;"). Therefore, automatic inclusion of all available sources of occupational exposure limits as outlined on page 58896 of the preamble when discussing the intent of the definition of "hazardous exposure level" will expand OSHA's expressed intent. Monsanto believes that OSHA's enforcement should be limited to the PELs and Section 5(a)(1) chemicals when applied to the required use of respirators. The expansion of the regulatory exposure limits beyond existing PELs should be the basis of separate rulemaking efforts.

(b) Definitions.

OSHA had stated in the preamble on page 58896 that they support the use of the current definitions from the ANSI Z88.2-1992 standard or NIOSH's RDL to avoid confusion that occurs due to the lack of definitions in the current respirator standard. In reviewing the definitions proposed we find that a number of key definitions are missing: e.g., Respiratory inlet covering; loose fitting facepiece, tight-fitting, half and full facepiece, helmet and hood; fit check; respiratory hazards (dust, fume, mist, etc). We feel that the simplest approach to correcting this problem would be to adopt the ANSI Z88.2-1992 definitions. They are

generally broader than those proposed by OSHA and allow for changing technology. However, we also would like to offer some specific comments on some of the definitions proposed by OSHA.

It is recommended that the definition for "adequate warning properties" be revised so that the word "chemical" is replaced by "gas or vapor" to make it clear that warning properties are not a concern with particulates.

It is recommended that the definition of "assigned protection factor" be revised to read as follows: "means the expected workplace level of respiratory protection that would be provided by a properly functioning respirator or a class of respirators to properly fitted and trained users."

It is recommended that the definition of "atmosphere-supplying respirator" change its use of the word "air-supplied" to "supplied air" to be consistent with 30 CFR 11 and OSHA's own SAR definition included in this proposed revision.

It is recommended that the definition of disposable respirator be expanded to address maintenance and repair issues. A suggested revised definition would read "Disposable respirator means a respiratory protective device which cannot be resupplied with an unused filter or cartridge, is not intended to be maintained or repaired, and which is to be discarded in its entirety after its useful service life has been reached."

The definition of "fit factor" limits existing accepted and potential future technology. We would recommend the following definition be used: "Fit factor means a quantitative measure of the fit of a particular respirator to a particular individual."

The proposed standard provides a definition for the term "hazardous exposure level" which would use available occupational exposure limits from OSHA, ACGIH, or NIOSH. The definition "hazardous exposure level" also has a fourth item that states that where a PEL, TLV, or REL did not exist then the employer is to use an exposure limit for the hazardous chemical "based on available scientific information including material safety data sheets." In the preamble on page 58896 column 2, OSHA states that where an employer decides to use a respirator to control exposures, "... the employer must establish a protective goal, based on available information, in order to choose the appropriate respirator, and must be able to substantiate how that goal was chosen." OSHA also stated in the preamble on page 58896 column 3 that they consider that the term "hazardous

chemical" match the Hazard Communication Standard's definition of a health hazard. This means that any voluntary use of a respirator for chemicals other than those with an established PEL will require that the employer either select existing exposure limits established by agencies other than OSHA or develop exposure limits for hazardous chemicals when there are not any available. This selected voluntary exposure limit therefore becomes enforceable by OSHA for all aspect of respirator use including the required evaluation and implementation of engineering controls. Monsanto does not support the use of voluntary exposure guidelines by OSHA as a substitute for the development of regulatory exposure limits. These OSHA preamble interpretations on "hazardous exposure level" and "hazardous chemical" goes beyond the defined scope of the standard (PELs and 5(a)(1) substances). The definition of "hazardous exposure level" should therefore be limited to chemicals with PELs or that are considered 5(a)(1).

The definition for "immediately dangerous to life or health or IDLH" taken literally includes chronic toxins since a delayed adverse health effect may be possible from a high exposure. We would recommend that the issue of delayed effect be addressed so that only the substances with a delayed effect expected to occur in the immediate future like hydrogen fluoride gas would be included. A suggested revised wording would be " means any condition that poses an immediate threat to life or that would cause irreversible adverse health effects or that would interfere with an individual's ability to escape unaided from a permit space."

NOTE: Some materials -- hydrogen fluoride gas and cadmium vapor, for example -- may produce immediate transient effects that, even if severe, may pass without medical attention, but are followed by sudden, possibly fatal collapse 12-72 hours after exposure. The victim "feels normal" from recovery from transient effects until collapse. Such materials in hazardous quantities are considered to be "immediately" dangerous to life or health."

Additionally, the use of other values that could be substituted for the NIOSH IDLH values where supported by documentation, such as AIHA ERPG 3 values, should be addressed in the standard. Also, any proposed definition for IDLH should also be proposed for 1910.120 and 1910.146 so that they contain the same wording to maintain consistency across OSHA regulations.

It is recommended that the definition for "maximum use concentration (MUC) be revised to use the OSHA proposed term of "hazardous exposure level" in place of "permissible

exposure limit".

It is recommended that the name of the definition "oxygen deficient atmosphere" be changed to "Oxygen deficient atmosphere-not IDLH" for clarity.

The definition of "positive pressure respirator" excludes PAPRs as well as hoods, helmets and loose-fitting facepieces. The following definition is more accurate since it includes all respiratory inlet coverings and acknowledges that positive pressure is not necessarily maintained all the time: "means a respirator in which the pressure inside the respiratory inlet covering is normally positive with respect to ambient air pressure. This includes powered air-purifying, pressure demand and continuous flow respirators."

The definition for "pressure demand" is inaccurate since the positive pressure varies during the respiration cycle and with work rate. In addition, we feel that the term "substantially maintained" is vague. We recommend a revised definition of "pressure demand means a positive pressure atmosphere-supplying tight-fitting respirator that admits respirable gases to the facepiece when the positive pressure is reduced inside the facepiece by inhalation."

The "quantitative fit test (QNFT)" definition is a limiting based on existing technology. We recommend a revision to read as follows: "A fit test that uses an instrument to measure the challenge agent inside and outside the respirator."

The definition of "respirator" is made vague by its use of the term "intended." The wearer, the employer, or the designer of the device all could be considered the source of the decision on what type of protection was intended. Employees sometimes wear bandannas to "protect" against dust exposures. Safety and health professional do not consider these to be respirators. It is recommended that the word "designed" be substituted for the word "intended." Additionally, it would be appropriate to include the term "NIOSH approved" in the definition to eliminate any confusion as to whether respirators not approved by NIOSH are permitted to be used.

The definition of "service life of a chemical or organic vapor cartridge or canister" is unclear since breakthrough percentage, humidity and other test conditions, are not specified. It would also appear to only permit manufacturers to run breakthrough studies for contaminants. The definition should allow the use of any source of appropriate data to be used in the establishment of service life information. Additionally, the term "break though" requires a definition.

Is it the first trace or the PEL? A recommended revision is as follows: "Service life means the period of time that a respirator provides adequate protection to the wearer."

(c) Respiratory protection program

The proposed elements of a respiratory protection program outline in (c)(1)(iv) includes fit-testing requirements for all air purifying respirators including PAPR hoods and loose-fitting facepieces. Hoods and loose-fitting facepieces should not be included since there are not any recognized methods for fit-testing these types of respirators. A recommended revision would be: "(c)(1)(iv) fit testing procedures for tight-fitting respirators both air-purifying and atmosphere-supplying."

We support the current wording as outlined in the proposed revision in (c)(2) addressing the training or qualifications of a program administrator. It is difficult to establish a set of training/qualification requirements for program administrators due the variety of levels of respirator usage. An employer's respirator usage may be limited to dust respirators or may have a wide variety of types covering both air-purifying and atmosphere-supplying respirators. Program administrator training/qualifications would need to cover a wider range of topics in the latter case than in the former case. It is recommended that the training or experience requirements remain general and that it remain appropriate for the complexity of the program managed.

(d) Selection of respirators

Employers should not be forced to provide employees with respirators when they are not considered to be necessary. This should be a decision of the employer. It is therefore recommended that paragraph (d)(1) be revised as follows: "The employer shall provide respirators and respiratory equipment at no cost to employees when such equipment is necessary to protect the health of the employee."

Since the word "elastomeric" is not defined in (d)(2), it could be interpreted to apply to SCBAs and other air-supplied respirators. This would dramatically increase the cost of compliance. OSHA's estimate of the regulatory impact for the Chemical and Allied Products quotes a cost of \$627 per establishment. The purchase of just one SCBA would greatly exceed that dollar value and therefore by itself render this 1984 cost estimate invalid.

Also, this multiple size and manufacturer requirement does not permit employers to manage use of respirators. Since the respirator wearer already has to pass a fit test before they

can use the respirator, proper sizing and comfort is already controlled.

Additionally, it is not necessary to require employers to have respirator models from two manufacturers since several manufacturers now have two completely different models of half mask respirator with different fit characteristics. If an employer makes both models available, the intent of this paragraph is satisfied. The wording of the paragraph should be modified to address this issue.

We feel that it would be better to use language that allows for the variation that occurs in different work places. We strongly suggest the following wording taken from ANSI Z88.2-1992 (9.3.1):

"(d) (2) No one size or model of respirator will fit all types of faces. Different sizes and models will accommodate more facial types. Therefore, an appropriate number of sizes and models shall be available from which a satisfactory respirator can be selected. The number of models and sizes necessary to fulfill the intent of this requirement vary for workplaces. For example, in a workplace with four workers, one model and size may fulfill the requirement; whereas a workplace with a hundred wearers may require different models in various sizes."

The wording for sentence (d) (3) should be expanded to include the conditional statement "where available" because not all eleven types of data may be available. For example: fit test results would not be available for respirators utilizing hoods or helmets, an occupational exposure limit may not be available, the level of exposure may be unknown as in an emergency situation or the warning properties may not be known.

It is recommended that (d) (3) (v) permit the use of professional judgement when based upon exposures expected to be equal to or greater than the work activities being assessed. This would permit the selection of the same respirator for short exposures to a substance when only full shift data exists and the short exposure is not expected to exceed the full shift exposure. We would recommend the revision to be worded as follows: "(d) (3) (v) The results of workplace sampling of airborne concentrations of contaminants or assessments with expected exposures less than or equal to actual workplace sampling."

The requirement in (d) (3) (ix) to review fit test results as part of the review of information to properly select a respirator should not apply to every situation. In paragraph (f) (6) (ii) (A), OSHA permits the use of qualitative fit tests

for full face air purifying respirators and restrict their use to 10 times the hazardous exposure level. This is the only situation where an individual can use a respirator where they have not demonstrated that they can achieve the full assigned protection factor. Because the requirement under (d) (3) (ix) would add a significant effort to the review process but no important information, it should only be used in a general form in work situations where full face respirators have been fit tested using qualitative methods. We would recommend the following word change to address this issue "(d) (3) (ix) the assigned protection factor of the respirator to be used unless the employer relies on qualitative fit testing of full face negative pressure respirators then the value of 10 is to be substituted for the assigned protection factor;".

It is suggested that paragraph (d) (3) (xi) be modified so that only the respirators intended to be used are reviewed. We recommend the following revision: "The physical characteristics, functional capabilities, and limitations of the various types of respirators to be made available by the employer for use by the employee."

We support the use of the ANSI Z88.2-1992 standard's assigned protection factors (APF) rather than the NIOSH values referenced by OSHA in (d) (5) as stated in our opening remarks.

It is recommended for clarity that the first sentence of (d) (5) be revised to include the word "appropriate" as follows "(d) (5) The employer shall make appropriate types of respirators available for selection ...".

We would recommend that (d) (8) and (d) (9) be revised and combined as follows:

(d) (8) Air-purifying respirators shall not be used for a hazardous gas or vapor with poor or inadequate warning properties unless at least one of the following conditions is met:

- (i) Their use is permitted under the provisions of a substance specific OSHA standard, or
- (ii) The respirator has an end of service life indicator approved by NIOSH for use with the specific chemical, or
- (iii) A change schedule has been implemented to assure that air-purifying cartridges and/or canisters are replaced before their useful service life has expired, and the gas or vapor does not have a ceiling limit that is exceeded by the warning properties."

The purpose of the suggested change of the word "chemical" in (d) (8) to "gas or vapor" is to avoid including particulates in the definition which is not appropriate.

The purpose of the proposed change from the specification of "... before 80% of their useful service life has expired ..." to "... before their useful service life has expired ..." is to make it consistent with ANSI Z88.2-1992.

The general combination of both (d)(8) and (d)(9) with the elimination of the permitted use of cartridges where the warning properties were up to 3 times the "hazardous exposure level" (d)(8)(ii) is needed to address the current NIOSH approved use of mercury cartridges with end of service life indicators. Mercury does not have a recognized warning property level and therefore the use of the approved mercury cartridge would be eliminated by the originally proposed wording. Use of a limit of 3 times the hazardous exposure level would also limit future advances in end of service life indicator technology

Another suggested change addresses OSHA's inclusion of service life predictions for filters. Since breathing resistance is the indicator of the need to change them, we feel there is not a need to predict their service life.

Additionally, we are not in agreement with OSHA's justification for the policy to limit the use of air purifying respirators in the absence of adequate warning properties to 3 times the hazardous exposure level given on page 58904 of the federal register (11/15/94) (top of third column). Assigned Protection Factors have nothing to do with detection of warning properties (or vice versa). OSHA also refers to a protection factor table in a proposed 42 CFR Part 84 which has never been published.

We would recommend that the values used in Table I Column 2 for 5001 to 6000 feet (19.5%) be replaced with 20.0%, 6001 to 7000 feet (19.5%) be replaced with 20.8%, 7001 to 8000 feet (19.5%) be replaced with 20.9% and at above 8000 to 14,000 feet (19.5%) as identified in (d)(10)(i) be replaced with 20.9% oxygen. This would utilize some of the more conservative thinking ANSI Z88.2-1992 used where they recommended that at reduced oxygen partial pressures of less than 122 mm Hg use of an atmosphere supplying respirator is appropriate. It also recognizes OSHA's position that at higher elevations, oxygen enrichment is not needed. We also do not agree with permitting the use of air purifying respirators at elevations above 8000 feet where the percent oxygen level is below 20.9%. This level is considered by ANSI Z88.2-1992 and OSHA (federal register 11/15/94 page 58906 column 1 first paragraph) to be an oxygen deficient IDLH atmosphere.

Additionally, we would rename Column 2 of Table I as "Oxygen Deficient Not IDLH" to avoid confusion with Column 3 of

Table I.

A correction to (d)(10)(iii) to properly reference Table I instead of Table III is needed.

We would also recommend that 1910.146 Permit-Required Confined Spaces definitions for "hazardous atmosphere" and "oxygen deficient atmosphere" be revised to be consistent with the following proposal:

We would recommend (d)(10) to be renumbered and reworded as follows:

"(9) Where an oxygen deficient atmosphere or an oxygen deficient IDLH atmosphere exists, appropriate respirators shall be selected as follows:

(i) Either an air-purifying respirator or atmosphere supplying respirator may be used where an atmosphere has a measured oxygen content of at or above the values in Table I Column 2 (oxygen deficient not IDLH) between 0 and 14,000 feet.

(ii) An atmosphere-supplying respirator shall be used for oxygen deficient not IDLH atmospheres with a measured oxygen content level between the values in Table I column 2 (oxygen deficient not IDLH) and column 3 (oxygen deficient IDLH) between 0 and 14,000 feet.

(iii) Either a full facepiece pressure demand SCBA or a combination full facepiece pressure demand supplied air respirator with auxiliary self contained air supply shall be used for oxygen deficient IDLH atmospheres with a measured oxygen content below the values in Table I column 3 between 0 and 14,000 feet.

(iv) Either a full facepiece pressure demand SCBA or a combination full facepiece pressure demand supplied air respirator with auxiliary self contained air supply shall be used regardless of the level of oxygen deficiency anytime the reason for the oxygen deficiency is not known or not controlled."

Table I.-Oxygen Percentages Constituting Oxygen Deficient and Oxygen Deficient IDLH Atmospheres

Column 1 altitude above sea level (in feet)	Column 2 percent oxygen below which an oxygen deficient not IDLH atmosphere exists	Column 3 percent oxygen below which an oxygen deficient IDLH atmosphere exists
0 to 3000 .....	19.5	16.0
3001 to 4000 .....	19.5	16.4
4001 to 5000 .....	19.5	17.1
5001 to 6000 .....	20.0	17.8

6001 to 7000 .....	20.8	18.5
7001 to 8000 .....	20.9	19.3
Above 8000 to 14,000 .....	20.9	19.5 <sup>(1)</sup>

(1) For altitudes above 8000 feet, an oxygen deficient IDLH atmosphere exists when the oxygen level falls below 19.5%.

(e) Medical evaluation

In general, Monsanto supports the concepts offered by the Medical Evaluation Alternative 3. We believe that all required respirator users should receive annual medical screening using a questionnaire to identify those individuals that should receive further medical evaluation. We feel that there is not a need for the examining physician to receive a list of the chemicals that the employee is exposed to in the workplace. The proposal for this information should be restricted to the development of a generic medical monitoring standard by OSHA and has no bearing on the outcome of a medical evaluation for respirator use. We would like to offer the following specific comments as an outline to what we feel is an appropriate respirator medical evaluation program.

Employees should be screened by a single page questionnaire (modified from American Thoracic Society or British Medical Review Council questionnaires) which seeks information about important symptoms and historical facts. These include history of lung infection, asthma, tobacco use, heart disease, hypertension. In addition, symptoms of shortness of breath, cough, productive cough, chest pain, known allergies should be elicited. Positive responses on the questionnaire should trigger further evaluation.

The questionnaire should be administered on a regular basis, such as annually.

Spirometry should be done, irrespective of history, on all new respirator users, under the direction of a nurse or physician with knowledge of pulmonary function, pulmonary and heart disease, and spirometry, as well as the physiologic effects of respirators.

Prior users may be screened by questionnaire, with spirometry done at the discretion of the nurse or physician.

Physical examination of the ears, nose, throat, chest, heart, and lungs on prior users and all new users at the discretion of the nurse or physician. Qualifications of the examiner are as stated above. Use of non-physician examiners must follow local law for collaborative practice.

The MVV 0.25 should be used along with FEV1 and FVC in

spirometry.

We do not recommend the use of hearing testing for respirator users. That type of testing should remain within the context of Hearing Conservation Programs. The questionnaire will elicit any history of ear disease. As noted above, ear evaluation should be a part of all evaluations to wear a respirator.

Evaluation of the endocrine system is not specifically required.

Since the process is a clinical prevention method, it should not be triggered by employee request only. Employees are not likely to ask for an evaluation unless stimulated by symptoms or an especially thorough training program. If symptoms have occurred, the system has not worked correctly. Evaluation should be a companion piece to good training.

The evaluation, triggered by the questionnaire, should be the same for all types of respirators. This is important, since the evaluation has a purpose other than the use of respiratory protection; the examiner must detect any change in lung function, since the change may represent an adverse health effect of occupational or other environmental exposure. Moreover, the change may represent a subtle change in health status due to other causes. Since evaluation is triggered by questionnaire, variations in spirometry and physical examinations are centered on the employee rather than on type of respirator per se. The examiner must be attuned to the subtle changes in the spirometry findings, as well. Reference values and confidence intervals for lower limits of normal for FVC and FEV1 have been available for more than a decade and should be well known (or become known) to examiners. [Crapo RO et al: AmRevRespDis 123:659, 1981]

Alternate respirator use, e.g., powered air purifying respirators, are appropriate in situations where pulmonary reserve is limited, but the employee is clearly fit for duty in all other respects. In these cases, more frequent evaluation is appropriate, including frequent "cross-shift" and/or "cross-week" checks to assure maintenance of health and function.

We feel that the use of heavier respirators such as SCBAs should have some special considerations. Based upon the questionnaire responses, the medical history elicited by the examiner, and the initial physical examination, it may be necessary to expand the evaluation in some cases. If history or physical findings suggestive or diagnostic of cardiovascular disease are present, the examiner may require

further testing. The use of cardiovascular stress testing should be assessed as to feasibility prior to the testing process. This will be conditioned, as well, by the level of physical activity and the conditions in which respirators, particularly SCBAs, are used.

Additionally, employees in some work activities (e.g., firefighting, rescue operations, diving) present special situations and must be evaluated by examiners with special knowledge in the field.

We disagree with the comment in the preamble (page 58910 column 3) that positive pressure respirators are less burdensome than negative pressure respirators. Some respirators, like PAPRs may be but an SCBA will not be less burdensome.

(f) Fit testing

We recommend that (f)(1) be reworded as follows: "(f) Fit testing--(1) The employer shall ensure that when employees are required to wear tight-fitting respirators they pass a fit test as outlined in (f)(2) through (f)(9)." This wording reduces the ambiguity of the proposed language recognizing that only tight-fitting respirators need to be fit tested. It also eliminates the potential permitted use of respirators at the individual's actual fit test value rather than at the assigned protection factor based upon passing a fit test.

We recommend that (f)(2) be rewritten to the following "(f)(2) The employer shall ensure that an employee is fit tested prior to initial use of the respirator facepiece, whenever a different fitting respirator facepiece (for example: make or size) is used, and annually thereafter." This suggested change addresses some respirator manufacturers' who offer multiple models of half face respirators, some of which may or may not come from the same mold. Additionally, this permits employers to utilize the same fit test for a manufacturer who offers the same facepiece mold for both an air-purifying and atmosphere-supplying respirator but the model number of the respirator is different.

We recommend clarifying the relationship and extent of fit testing outlined in both (f)(6)(i)(A) and (f)(6)(ii)(A) by indicating that the employee passes a fit test and that passed test only applies to the employee not all employees. They therefore should be reworded as follows "(f)(6)(i)(A) Qualitative fit testing shall be performed in accordance with the established protocols specified in section II of Appendix A or new protocols that meet the minimum criteria

contained in section I of Appendix A. If the employee passes the qualitative test the employee may wear the respirator in atmospheres no greater than ten times the hazardous exposure level." "(f)(6)(ii)(A) Qualitative fit testing shall be performed in accordance with the established protocols specified in section II of Appendix A or new protocols that meet the minimum criteria contained in section I of Appendix A. If the employee passes the qualitative fit test then the employee may wear that respirator in atmospheres no greater than ten (10) times the hazardous exposure level."

Since some currently accepted technology do not employ chambers and this may restrict any future development, we recommend the deletion of the reference to a test chamber in (f)(6)(i)(B). It should read as follows "(f)(6)(i)(B) Quantitative fit testing shall be performed in accordance with an established protocol specified in section II of Appendix A or a protocol that meets the minimum criteria contained in section I of Appendix A. The test subject shall not be permitted to wear a half mask or quarter facepiece respirator unless a minimum fit factor of one hundred (100) is obtained. The respirator may not be worn in concentrations greater than ten (10) times the hazardous exposure level regardless of the measured fit factor."

Since some currently accepted technology do not employ chambers and this may restrict any future development, we recommend the deletion of the reference to a test chamber in (f)(6)(ii)(B). It should read as follows "(f)(6)(ii)(B) Quantitative fit testing shall be performed in accordance with the established protocol specified in section II of Appendix A or a new protocol that meets the minimum criteria contained in section I of Appendix A. The test subject shall not be permitted to wear a full facepiece respirator unless a minimum fit factor of ten (10) times its assigned protection factor is obtained. The full facepiece respirator may not be worn in concentrations greater than its assigned protection factor regardless of the measured fit factor."

We recommend that (f)(6)(iii)(B) be revised so that an attachment for the purpose of conducting the fit test may be used as well as permit the fit testing of either a tight fitting atmosphere-supplying or tight fitting powered air-purifying respirator in the negative pressure mode. "(f)(6)(iii)(B) During the fit test either the respirator is only used in the negative pressure mode of operation or if the manufacturer makes available an identical facepiece as part of an air-purifying respirator model, then the facepiece is tested in that fashion with only the addition of attachments for the purpose of conducting the fit test."

We support the maintenance of the most current fit test

record for the employee for the respirator permitted to be used by the employer. Creating a second record that certifies that the employee was fit tested just adds to the recordkeeping effort.

(g) Use of respirators

We recommend that (g)(2) be revised as follows: "(g)(2) The employer shall develop and implement specific procedures for the use of respirators when they are to be used in atmospheres where oxygen deficiency or the concentrations of a hazardous chemical are unknown and/or potentially immediately dangerous to the life or health (IDLH) of the employees. These procedures shall include the following provisions:" As proposed, the paragraph would require the development of these procedures for all employers using respirators even if the employer only has available dust/mist respirators.

We recommend that (g)(2)(iv) be changed to recognize the NIOSH permitted use of a combination full facepiece pressure demand supplied air respirator with auxiliary self-contained air supply. There may be some limited access workplace conditions which dictate use of SAR/SCBA. The wording should be revised as follows: "(g)(2)(iv) The emergency assistance personnel present shall be equipped with either a full facepiece pressure demand self-contained breathing apparatus or combination full facepiece pressure demand supplied air respirator with auxiliary self-contained breathing apparatus."

In (g)(3), since pressure demand is one type of positive pressure respirator and this paragraph needs to address loose-fitting facepieces, as is the case in ANSI Z88.2-1992 (7.5.1). The suggested revised wording is as follows: "(g)(3) The employer shall not permit negative or positive pressure respirators which depend for effective performance on a tight or loose-fitting facepiece-to-face seal to be worn by employees with conditions that prevent such fits. Examples of these conditions include facial hair that interferes with the facepiece seal, absence of normally worn dentures, facial scars or headgear that projects under the facepiece seal."

The proposed language in (g)(4) addressing the use of corrective glasses or goggles is acceptable. Use of contact lenses with full face respirators as seen in the Lawrence Livermore National Laboratory study (UCRL 53653 8/16/85) indicates that they have not posed a problem. An employer should be able to decide to permit their use based upon their own internal safety concerns. This was also addressed in the recent revision of 1910.133 in 1994.

In (g)(6), because filters are for particles (see definition) and warning properties are associated with gases and vapors the following revised wording is recommended:  
"(g)(6) The employer shall permit employees to leave the respirator use area promptly to change the cartridge(s) or canister or replace air-purifying respirators whenever they detect the warning properties of the gas or vapor."

Additionally since filters will never remove chemical vapors, we recommend that the phrase "or chemical vapor breakthrough be removed from (g)(7). It should be revised as follows "(g)(7) The employer shall permit employees to leave the respirator use area promptly to change the filter elements of air-purifying respirators whenever they detect a change in breathing resistance."

We recommend in (g)(10) that the term "facepiece seal check" be changed to "fit check" to recognize common terminology as described by ANSI Z88.2-1992.

We support OSHA's position as stated on page 58923 column 3 that employers should not be required to provide PAPRs as an alternative to tight-fitting negative pressure respirators when employees request them and they would be acceptable. We agree that this should remain a voluntary decision on the part of the employer to provide this more expensive equipment.

(h) Maintenance and care of respirators

The performance-oriented language of the existing standard for when to clean a respirator is more reasonable. Cleaning and disinfecting of individually assigned respirators should be done "as needed" to assure proper respirator performance and to preclude skin irritation or toxicity hazards from accumulation of materials. We recommend the following wording be used: "(h)(1)(i) Routinely used respirators issued for the exclusive use of an employee shall be regularly cleaned and disinfected;"

We recommend that the start of (h)(2)(ii) be revised as follows: "(h)(2)(ii) Where emergency use respirators are available, they shall be accessible . . .". The current wording implies that emergency respirators are always required.

We recommend (h)(2)(iv) be revised as follows: "(h)(2)(iv) Respirators shall be packed or stored to prevent deformation of the facepiece or other component parts." Neither the exhalation valve nor any other part of a respirator should be stored in a distorted position.

Paragraph (h)(3)(i)(A) and (B) include SCBAs. This same language is in the existing 1910.134, and many people believe that the monthly inspection is all that is required for an SCBA. To clarify the regulatory language, we recommend moving (h)(3)(i)(C) into (h)(3)(ii) and making it two subparagraphs as follows:

"(h)(3) Inspection.

(i) The employer shall ensure that respirators are inspected as follows:

(A) All respirators used in non-emergency circumstances shall be inspected before each use and during cleaning; and

(B) All respirators maintained for emergency situations shall be inspected at least monthly, and checked for proper function before and after each use. Emergency escape respirators shall be inspected before being carried into the workplace;

(ii) The employer shall ensure that the respirator inspections include the following where applicable:

(A) A check of respirator function, tightness of connections and the condition of the facepiece, headstraps, valves, connecting tube, and cartridges, canisters or filters;

(B) A check of rubber or elastomer parts for pliability and signs of deterioration;

(C) Assurance that the cylinder pressure of self-contained breathing apparatus is at least 90% of the manufacturer's recommended pressure. Cylinders below 90% shall be recharged; and

(D) Determine that the regulator and warning devices function properly."

Inspection certifications for emergency use respirators as written in (h)(3)(iii) should not be required for respirators assigned to an individual such as those for emergency escape. We recommend the following revision  
"(h)(3)(iii) The employer shall certify in writing the inspection of respirators maintained for emergency entrance into IDLH or otherwise potentially hazardous environments. Certification shall include ..."

(i) Supplied air quality and use

We recommend changing the term "atmosphere-supplying" to "supplied air" in (i)(2) to recognize the permitted use of compressed oxygen in appropriate NIOSH approved respirators. We would also recommend the addition of (from ANSI Z88.2-1992): "Oxygen concentrations greater than 23.5% shall be used only in equipment designed for oxygen service or distribution" to (i)(2).

With the above changes, we recommend that (i)(3) be deleted

due to redundancy.

Use of very low pressure air compressors, like carbon vane air pumps, should not require the testing, filtration and moisture specifications of regular breathing air compressors. So long as the requirement of air intake placement to avoid entry of contaminated air (i)(4)(ii) is met, there is no reason to expect that the air will not meet grade D quality specifications. This exception should be added to (i)(1)

We recommend that (i)(4)(i) recognize that DOT requirements found in 49 CFR Part 173 also apply to breathing air cylinders.

We recommend that the moisture specifications of ANSI/CGA G7.1-1989 Grade D air be used in (i)(4)(ii). The ANSI/CGA standard specifies a dew point 10° F below ambient at 1 atmosphere. OSHA has not provided any reason for the change to Celsius or to line pressure.

While (i)(4)(iii) is roughly equal to ANSI/CGA G7.1-1989 requirements, the terminology is different. We would recommend the use of the same wording for consistency and understanding of dew point terminology. ANSI/CGA G7.1 recommends a dew point of -50°F. It would be revised as follows "(i)(4)(iii) The moisture content in compressed air cylinders shall not exceed a dew point of -50°F at 1 atmosphere."

The references used in (i)(6) are out of date. We recommend the following current versions be substituted in (i)(6): Z48.1-1954 (R 1971) is now ANSI/CGA C-4-1990 and BB-A-1034a is now BB-A-1034-B-1985.

In response to OSHA's request for comment on page 58926 column 3, we believe that OSHA should not automatically require that all compressors have carbon monoxide filters and alarms. Alarms or compressor shut downs are only needed when there is a reasonable possibility of the generation of carbon monoxide in the compressor due to equipment problems. The case OSHA cited in the preamble is one of a failure to follow the current regulations when it was reasonable to expect the generation of CO. It was not a failure of those regulations.

(j) Identification of filters, cartridges, and canisters

We recommend that (j)(1) be deleted since labelling issues are addressed in (j)(2) and mislabelling and color coding issues are outside the control of the employer.

We recommend that (j)(2) be revised to address the following issues: (1) As written, an employer is in violation if, for example, a label is covered with paint overspray during use; and (2) Some OSHA substance specific standards require that cartridges be dated by the employee to indicate when they first were used. Some employers may use this method to control cartridge usage even when a substance specific standard does not apply. This type of alteration should be permitted. It is therefore recommended that the following wording be used: "(j)(2) The employer shall ensure that the existing NIOSH approval label on a filter, cartridge, or canister is not intentionally removed, obscured or defaced while they are in service in the workplace except if it is to record initial use information."

(k) Training

We recommend that the training on respiratory hazards be limited to those substances for which a respirator is required to be worn. Regulatory expansion beyond that which applies to the use of respiratory protection would fall under a revision to the Hazard Communication Standard. Therefore a suggested revision is "(k)(1)(i) Nature, extent, and effects of respiratory hazards for which the employee is required to wear a respirator as required under the Hazard Communication standard (29 CFR 1910.1200);"

The respirator maintenance training required to meet (k)(1)(iv) should only cover the procedures that the employee is expected to perform. Some employers may utilize a central maintenance and cleaning group for respirators and therefore the average user does not need to know any significant maintenance information.

We recommend that the training elements include a discussion on the purpose of the medical evaluation being performed. We feel that OSHA's use in (k)(1)(vi) of the phrase "The contents of this section ..." could be interpreted to mean a literal reading of the standard. We therefore recommend that (k)(1)(vi) be revised as follows: "(k)(1)(vi) The general requirements of this section (29 CFR 1910.134) and the written respiratory protection program, its location and availability and the purpose of the medical evaluation program."

We recommend that the immediate supervision of those wearing respiratory protection should also receive training on the proper selection, use and maintenance of respirators as well as the importance of fit testing and medical evaluations.

(l) Respiratory protection program evaluation

We recommend that the annual review of the program be certified by the program administrator to have been completed and that this certification be maintained until the next review is complete.

(m) Recordkeeping and access to records

We feel that NIOSH should have to justify its access to any record maintained as would any other outside research group. We recommend that references to "the Director be dropped from (m) (2) (ii).

(n) Effective date.

(o) Appendixes.

Appendix A: Fit Testing Procedures (Mandatory)

I. New Fit Test Protocols

We recommend that the statement concerning the concentration of test agent permitted to be generated during a test be clarified in Appendix A Section I.A.2.(a). Since an occupational exposure is related to an individual over a set time period the requirement should be modified as follows: "Appendix A Section I.A.2.(a) The test agent shall be relatively non-toxic. The test subject's exposure as a result of testing, regardless of the respiratory protection worn, shall not exceed an OSHA permissible exposure limit, and not create a health or physical hazard for the test subject or operator." For example; Consider a test agent with a TWA limit of 100 ppm used for fit testing at a concentration of 200 ppm. The "concentration generated" has exceeded the exposure limit; the "test subject's exposure" has not, since the test takes only eight minutes.

C. Minimum Criteria for a Valid Particle Counting Quantitative Fit Test

We recommend that there not be a separate validation criterion for particle counting QNFT (Appendix A Section I.C); all new methods should be evaluated by the same criteria.

The requirements outlined in Appendix A Section I.C.2 for an aerosol generator, control of test concentration, and aerosol characteristics will prevent currently accepted use of fit test equipment like the Portacount from ever being part of a validated method.

We recommend that the statement concerning the concentration of test agent permitted to be generated during a test be clarified in Appendix A Section I.C.2.(b). Since an

occupational exposure is related to an individual over a set time period the requirement should be modified as follows: "Appendix A Section I.C.2.(b) The test subject's exposure to the aerosol/gas as a result of testing shall not exceed an OSHA permissible exposure limit, the ACGIH threshold limit value, or any known recommended exposure limit when there is no OSHA PEL or ACGIH TLV, and not create a health or physical hazard for the test subject or operator." For example; Consider a test agent with a TWA limit of 100 ppm used for fit testing at a concentration of 200 ppm. The "concentration generated" has exceeded the exposure limit; the "test subject's exposure" has not, since the test takes only eight minutes.

We recommend that the term "appreciably absorbed or retained" when referring to Appendix A Section I.C.2.(c) be permitted so long as it is known and accounted for in the calculations.

#### D. Validation Criteria for Quantitative Fit Test Protocols

We recommend that OSHA define the level of "accuracy" of the protocol found in Appendix A Section II.C as well as describe how they arrived at their definition. This will permit the determination of the acceptability of a new quantitative method as proposed in Appendix A Section I.D.1.

#### E. Minimum Criteria for New Technology

We recommend that the statement concerning the concentration of test agent permitted to be generated during a test be clarified in Appendix A Section I.E.6.(a). Since an occupational exposure is related to an individual over a set time period the requirement should be modified as follows: "Appendix A Section I.E.6.(a) The test subject's exposure as a result of testing must be maintained below an established PEL, and not create a health hazard or physical hazard for the test subject or associated personnel." For example; Consider a test agent with a TWA limit of 100 ppm used for fit testing at a concentration of 200 ppm. The "concentration" has exceeded the exposure limit; the "test subject's exposure" has not, since the test takes only eight minutes.

Since about 30% of the particles generated in the corn oil systems are retained in the respiratory tract. Will this be used as the criterion used in Appendix A Section I.E.6.(b) for a particle not being considered retained by the airways of the respiratory tract?

The use of the words "concentration" and "breathing cycle" in Appendix A Section I.E.6.(d) eliminates systems such as

the controlled negative pressure method that use air as a test agent. We recommend a revision as follows: "Detection system for test agents must be capable of quantifying the test agent inside the respirator during the entire test exercise."

## II. Current Fit Test Protocols

We recommend that the Appendix A Section II.A. items 1 through 11 be considered informational on how to prepare to perform a fit test and not be specifically required. It is appropriate to perform these or similar steps prior to a fit test but it should not be a requirement to do it in exactly this fashion.

We recommend that the grimace be removed from the fit testing exercises (Appendix A Section II.A.14(f)). This should NOT be included in QLFT protocols, since its purpose is to break the respirator seal (acknowledged by OSHA on federal register page 58919). If this happens, the QLFT will fail. Since the common protocol is meant to be used for both QLFT and QNFT testing then it should be dropped from both.

### B. Qualitative Fit Test (QLFT) Protocols.

#### 3. Saccharin Solution Aerosol Protocol

We recommend that Appendix A Section II.B.3(a)(5) be corrected to read "... check solution consists of 0.83 grams of sodium saccharin USP in 100 cc of warm water. ..."

(b) Saccharin solution aerosol fit test procedure.

We recommend correcting the reference from Section VII.A.14 to Section II.A.14 in Appendix A Section II.B.3.(b)(8).

#### 4. Irritant Fume Protocol

The definitions and description of the fit test apparatus found in Appendix A Section II C Quantitative Fit Test (QNFT) Protocol are largely based on outdated technology and should be rewritten to reflect the way that QNFT is really done in today's world. Like it or not, most people (including OSHA) use the Portacount.

### C. Quantitative Fit Test (QNFT) Protocol

#### 2. Definitions

We recommend that the quantitative fit test definition in

Appendix A Section II.C.2(a) be consistent with the definition given in section (b) of the proposed standard. As we had recommended earlier, the "quantitative fit test (QNFT)" definition is limiting based on existing technology. We recommend a revision to read as follows: "A fit test that uses an instrument to measure the challenge agent inside and outside the respirator."

We recommend that the statement in Appendix A Section II.C.3(e) be clarified about not exceeding an exposure limit. It should be revised as follows: "The combination of substitute air-purifying elements, challenge agent and challenge agent concentration shall be such that the test subject is not exposed in excess of an established PEL for the challenge agent at any time during the testing process based upon the length of the exposure and the exposure limit duration."

We recommend that the abbreviated QLFT should be optional with the QNFT protocol listed in Appendix A Section II.C.4(b). The initial intent of this pre-test was to save time by eliminating poorly fitting respirators before conducting a QNFT the old way and experience has shown that with the new technology (Portacount); they do not save time. Additionally, using the Portacount in the count mode can give a quicker estimate of fit than fumbling around with smoke tubes, IAA, etc. In either case they should be optional and it should state that clearly.

The last sentence in Appendix A Section II.C.4.(g) contradicts Appendix A Section C.4(h) and OSHA's explanation on page 58920 in the preamble and we recommend that it be dropped. While we do not support the requirement of three QNFTs to determine acceptability of the fit of a respirator as discussed below, it is important to at least remain consistent in the regulation.

We do not agree with the implied position in Appendix A Section II.C.4.(j) since a high fit factor doesn't correlate with workplace protection and, therefore, does not allow the user to claim a protection factor above the assigned protection factor for a half mask or for a full facepiece, interpreting the result of a quantitative fit test should be treated the same as a qualitative fit test: as a pass/fail result. With this limitation on interpretation of QNFT results, one successful test per subject per facepiece worn would be sufficient. We therefore recommend that the requirement to perform a minimum of three QNFTs per person per facepiece be reduced to a single QNFT. References to it in Appendix A Section II.C.4(g) and (j) should be dropped.

We feel that the individual running the fit test program

should be allowed to determine when air purifying elements need to be changed (Appendix A Section II.C.4(1)). The canister/cartridge service life will vary depending on use conditions, and changing at the specified frequencies, based on our experience, would be a waste of money.

#### Appendix B: Recommended Practices (Nonmandatory)

We recommend in Appendix B changing the phrase "Facepiece Seal Checks" to "Facepiece Fit Checks" to standardize with ANSI Z88.2-1992. We would also recommend that statements be added to the effect that: "Fit checks are not substitutes for qualitative or quantitative fit tests.

The methods described are intended for elastomeric respirator facepieces. Fit check methods for non-elastomeric facepieces may be performed by following the manufacturer's instructions. A statement to that effect should be added to Appendix B.

We feel that OSHA should explain how to "Test the respirator to ensure that all components work properly. " without contaminating the respirator. If they cannot, it should be deleted from Appendix B Section II.H.

#### Appendix C: Medical Evaluation Procedures (Nonmandatory)

We also support OSHA's suggested elements of a medical evaluation. We would also recommend it be supplemented with the use of a non-mandatory questionnaire such as that found in ANSI Z88.6-1984.

#### XV. Proposed Substance Specific Standards Revisions

We recommend that OSHA standardize the frequency of fit testing of all respiratory protection. There is not any published data supporting the need to conduct respirator fit testing at frequencies of every six months for substances such as asbestos (1910.1001, 1926.58/1926.1101), lead (1910.1025, 1926.62) and acrylonitrile (1910.1045). We feel that this requirement wastes time and resources without providing any additional benefit.

We also believe that there is not any justification for limiting qualitative fit testing for use in fit testing only half mask respirators (Asbestos, Benzene, etc.). Nor does the need to perform quantitative fit testing have anything to do with whether you have more than a specific number of employees wearing respirators (acrylonitrile-10; inorganic arsenic-20). These requirements should be dropped in all applicable standards.

We recommend that the respiratory protection selection tables for Acrylonitrile, Cotton Dust, and Ethylene Oxide be revised to reflect the availability of IDLH values. Since NIOSH has recently revised many and added some new IDLH values and is currently reviewing comments received on standard criteria for revising and developing them, we recommend OSHA recognize this issue. While we are not endorsing the NIOSH IDLH values because these exposure values have not been open to public comment their presence needs to be addressed to avoid confusion. Use of other values that could be substituted for the NIOSH IDLH values where supported by documentation, such as AIHA ERPG 3 values, should be addressed in these standards.

We recommend that OSHA consider inclusion by reference of 1910.134 (e) requirements for medical evaluation for respirator use in the substance specific standards so that the information and procedures are standardized for all use of respiratory protection.

Workplace tests have not indicated that disposable respirators offer less protection than reusable respirators. There is no valid reason to exclude the use of disposables in any substance specific standard (such as asbestos, inorganic arsenic, etc.).

NIOSH does not have an approval schedule for coke oven emissions. We recommend that 1910.1029(g)(2)(iii) be deleted.

We recommend that the subparagraphs in Acrylonitrile 1910.1045 (h)(3)(iii)(A) and (B) be dropped and that issues of fit testing be addressed only in 1910.134 to maintain consistency of wording and application.

We recommend that respirator requirements found in ventilation 1910.94(d)(11)(v) be revised to address the misuse of a hose mask with blower and a gas mask in emergencies where atmospheres may be IDLH or unknown.

We recommend that requirements addressing the handling and storage of ammonia (1910.111(b)(10)(ii)) be clarified to say that 1910.134 applies and that gas masks are unacceptable for entry into IDLH, unknown, or oxygen deficient atmospheres.

We recommend that 1910.252 (c)(4)(ii) should refer to 1910.134. Respirator selection should be based on exposure levels.

We recommend that 1910.252 (c)(7)(iii) refer to 1910.1025 with its sampling requirements and respirator selection

table to maintain consistency.

We recommend that 1910.252 (c)(9)(i) refer to 1910.1027 (not 1910.1000) with its sampling requirements and respirator selection table to maintain consistency.

We recommend that 1910.252 (c)(10) refer to 1910.134. Respirator selection should be based on exposure levels.

We recommend that 1910.261 (b)(2) references should be to 1910.95, .132, .133, etc., rather than to out of date ANSI standards.

We recommend that 1910.261 (g)(10) specify that gas masks are limited to escape only or entry into known concentrations below IDLH with adequate oxygen. Also, we recommend that reference to an old ANSI standard be deleted.

We recommend that all the other substance specific standards in the OSHA standards that were not included (for example: benzene, formaldehyde, MDA, cadmium, etc.) covering respirator use in general industry, construction, and other OSHA regulated industries be amended in a fashion similar to the other proposed changes. There should only one set of regulations dealing with the general use of respiratory protection. Unless there is truly a unique reason for some substance specific standard to have requirements specific to it addressing some issue on the use of respirators, we believe that all other regulations should reference the general respirator standard.