



P.O. BOX 530390  
BIRMINGHAM, ALABAMA 35253-0390  
(205) 877-3000

54-273

A DIVISION OF  
VULCAN MATERIALS COMPANY

Docket Office  
Docket H-049  
U.S. Department of Labor, OSHA  
Room N2625  
200 Constitution Avenue  
Washington, D.C. 20210

OSHA  
REGISTRATION  
DATE APR 14 1995

re: Comments - 1910.134 Proposed Rule, Docket H-049

Dear Sir or Madam,

Vulcan Chemicals supports the efforts by OSHA to improve the respiratory protection standard. The current standard is out of date and needs to be updated. As noted by OSHA, the technology of respiratory protection has changed substantially in the past twenty-five years since the 1969 ANSI standard was adopted. It is this version of the ANSI standard that is the basis for the current OSHA respiratory protection standard.

We have reviewed the proposal and have several major concerns, These include:

- A risk assessment that shows a substantial benefit that is poorly documented.
- A defacto standard setting process by setting the TLV's and NIOSH REL's as standards. This also includes a requirement for a risk assessment for materials that do not have exposure limits.
- Requirements that are to be repeated periodically, these include items such as fit testing, training, medical evaluations and program evaluations that are required to be done annually. No basis for the frequency of the requirement is provided, and no

benefit has been established versus the cost involved.

- Requirement for assessments in respirator selection and program evaluation that place an extreme administrative burden on employers without a significant benefit.

We also have specific comments on many aspects of the proposed rule. We found that while many requirements that on the surface appear to be reasonable, when the technical basis for the requirement is examined, there is no data that supports the position expressed by OSHA. We will provide alternative regulatory language.

### Summary of Major Concerns

#### 1. Risk Assessment

We agree that properly selected, fitted and used respirators will perform better than a respirator that is not used or fitted properly. But for OSHA to assume that improvements in respirator performance will result in a decrease of adverse health effects requires that OSHA show that exposures are excessive where respirators are being used improperly and that OSHA demonstrate that the individual program defects actually lead to a decrease in performance in these instances.

For example although we agree that fit testing is necessary , it does not necessarily follow that improved fit testing will lead to large improvements in overall performance. The experience of Vulcan Chemicals is that employees being fit tested normally achieve an adequate fit on the first try. Over 90% of employees can achieve an adequate fit with the first respirator chosen. Fit testing does not increase the performance of the

respirator being worn. A report by Centaur Associates, Inc. states the primary cause of decreased performance is the fact that the respirator was not worn.

Thus OSHA's contractor has demonstrated that a cost effective approach for improving respirator performance would be to require that employees use the equipment as instructed.

We support OSHA's effort to issue a revised respiratory protection program. The revised standard is needed because the current rule is out of date. On that basis alone, a revised standard is needed. However, we do not agree that OSHA has performed an adequate assessment of risk or benefit to support any rulemaking.

## 2. Hazardous Exposure Level

We are also concerned about OSHA requiring that an exposure goal be established for where other exposure limits are not available. The process of setting an exposure goal is expensive and time consuming. It requires that those setting goals have a minimum amount of information on the toxicity of the chemical in question. Generating this information by itself can cost thousands of dollars for each chemical. OSHA has not considered the full implications of this requirement and must consider its technical and economic feasibility before it can impose such a burdensome requirement on employers.

The definition of hazardous exposure level should be defined only as the PEL. Employers should be required to use estimates of toxicity and exposure concentrations to make decisions on respirator selection.

### 3. Frequency Of Requirements That Are To Be Repeated Periodically.

OSHA requires that a number of provisions be repeated periodically, such as annual training, medical evaluations and program evaluations. In the proposal no basis is given for the need to repeat these provisions at such a frequency. Some of the more burdensome requirements are described below.

OSHA proposes that respirators be cleaned and disinfected after each use. We agree that this is appropriate for respirators being used by more than one person. But when a respirator is assigned to a single person, there is no need for daily cleaning and disinfecting. The need for cleaning will depend on the environment in which it is worn and how long and often it is used. For example, a respirator used for 10 minutes once a day does not need to be cleaned and disinfected at the end of each day. We suggest that the performance language from the ANSI Z88.2(1992) be used to set a cleaning and disinfecting schedule.

#### **4.5.7 Maintenance, Inspection and Storage.**

**Maintenance shall be carried out according to the manufacturer's instructions and on a schedule that ensures that each respirator wearer is provided with a respirator that is clean, sanitary, and in good operating condition. Each respirator shall be inspected by the wearer prior to its use to ensure that it is in proper working condition.**

OSHA is requiring that training be given annually. While we agree that initial training in respirator use is necessary, we do not believe that the complete respirator training program listed in the standard is needed on any annual basis for all respirators. Rather we propose that the employee be given a refresher training that requires an employee to demonstrate their ability to use the equipment.

OSHA also requires an annual assessment of the respirator program. We agree that some sort of assessment is needed, but disagree that this is necessarily an annual requirement. We support the following performance language for an assessment requirement:

**-"Periodic Assessment**

**The program shall be periodically audited to ensure that it is implemented and reflects the written procedures."**

**4. Content Of The Requirement For Assessment.**

OSHA has placed a requirement for assessment in several sections of the standard. This obligates the employer to document actions taken. This process of documentation is very burdensome.

In most cases, a simple review will be sufficient to select the appropriate respirator. We believe the ANSI Z88.2(1992) standard is correct where the requirement is written that selection shall be based on the considerations such as those listed by OSHA without a requirement to obtain information on each item where it can be estimated or approximated.

**Comments on specific requirements in the Proposal**

**(b) *Definitions:***

OSHA has defined adequate warning properties as "...the detectable characteristics of a hazardous chemical including odor, taste, and/or irritation effects which are detectable and persistent at concentrations at or below the hazardous exposure level, and exposure

at these low levels does not cause olfactory fatigue. Since particulates in most cases do not have warning properties, OSHA should change "hazardous chemical" to "gas or vapor" to make it clear that warning properties are not a concern with particulates.

OSHA defines a positive pressure respirator as an atmosphere-supplying respirator that is designed so that air pressure inside the facepiece is positive in relation to the outside air pressure during inhalation and exhalation. This definition excludes PAPRs as well as hoods, helmets and loose-fitting facepieces. The Z88.2-1992 definition is more accurate since it includes all respiratory inlet coverings and acknowledges that positive pressure is not necessarily maintained all the time.

OSHA defines service life of a chemical or organic vapor cartridge or canister as the period of time it takes for a specified concentration of a specific substance to break through the cartridge or canister. OSHA also states that this concentration is determined by the manufacturer for each type of cartridge or canister for particular substances. We suggest that the phrase "This concentration is determined by the manufacturer for each type of cartridge or canister for particular substances." be deleted since the manufacturer is unlikely to run service life tests.

***(c) Respiratory protection program***

Scope of a respiratory protection program:

In the current 1910.134, OSHA requires in section (a)(3) that "...The employee shall use the provided respiratory protection in accordance with instruction and training received." In the proposed rule, this requirement has been left out. We support such a

concept and urge that OSHA add to (c) of the proposed rule a requirement that is already contained in (a)(3) of the current standard. Namely: "The employee shall use the provided respiratory protection in accordance with instructions and training received."

(d) *Selection of respirators -*

Selection of the most protective respirator

OSHA in the proposal requested comment on a CACOSH proposal that "If monitoring is not done, the most protective respirator shall be used." The point is made that construction work situations are not stable, and that monitoring results for a particular individual operation would likely not be returned in time by a laboratory before that task was complete. We believe that previous monitoring results can be used, along with past experience with similar work operations, to estimate exposure levels. The ANSI Z88.2(1992) anticipates this type of problem and for respirator selection states that one should: "Measure or estimate the concentration of the contaminant(s);"

We support using language in the standard such as the ANSI language that allows for exposures to be estimated or measured.

(d)(2): Respirators available for selection:

OSHA in the proposal, where elastomeric facepieces are to be used, requires that a selection of respirators from an assortment of at least three sizes for each type of facepiece from at least two manufacturers. OSHA *"believes that nothing in the course of respirator use is more important than achieving the best possible fitting respirator"*. While

we agree that an appropriate respirator needs to be selected, we do not agree that OSHA's method of requiring the various respirators will achieve this goal. OSHA in the record cannot point to data that supports the notion that the availability of multiple respirators will give any added benefit.

We believe the performance language contained in the ANSI Z88.2(1992) standard on respirators available for fit testing is the appropriate language that OSHA should include in the final rule. Namely:

**"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."**

If someone is not able to fit comfortably in the available selection there are other alternatives, such as the fitting of a full facepiece respirator.

**(d)(5): Comments on OSHA's choice of Assigned Protection Factors**

Even though OSHA is not having an open discussion of assigned protection factors and how they are derived, the comments made by OSHA in the proposal on some of the workplace protection factor studies leads us to believe that OSHA has misinterpreted some of the data. When the record developed during the commenting and hearing process is reviewed we believe that sufficient evidence will be provided which will show that the ANSI assigned protection factors are appropriate.

In summary, OSHA has chosen the assigned protection factors listed by NIOSH that 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 while they do in negative and pressure demand modes. The source of air supply, bottle or airline, negative or powered flow leads to different levels of performance according to NIOSH. We believe the ANSI Z88.2(1992) assigned protection factors are the appropriate values for OSHA to use in the respiratory protection standard.

(d)(8) Warning properties

We support the position that OSHA has taken which recognizes that there are circumstances under which it may be safe or necessary to use air-purifying respirators despite the absence of adequate warning properties. We disagree that this should be limited to situations where the odor, taste, or irritation threshold is not more than three times the hazardous exposure level.

We agree with the analysis by OSHA in the proposal that *"...Allowing such use would require an examination of the toxicity of the chemical, its odor threshold, the health consequences of particular exposure levels, breakthrough time for the chemical for the type of respirator that will be used, how long the respirator will be used during the workshift, and the concentrations of the chemical that are found in the workplace. Calculating the service life of a particular respirator cartridge or canister for a chemical with poor warning properties would be possible using these facts and an appropriate safety factor."*

OSHA in the substance specific standards does not limit the use of cartridges to three times the exposure limit for the materials such as acrylonitrile where the odor threshold

is approximately ten times the PEL. OSHA has also issued a letter of interpretation which supports using air purifying respirators for substances that lack adequate warning properties. We believe that the ANSI wording is appropriate for using cartridge with materials that lack adequate warning properties, namely:

**m) If the contaminant is a gas or vapor and has poor warning properties, the use of an atmosphere-supplying respirator is generally recommended. When atmosphere-supplying respirators cannot be used because of the lack of a feasible air supply or because of the need for worker mobility, air-purifying devices should be used only if:**

- 1) the air-purifying respirator has a reliable end-of-service-life indicator that will warn the user prior to contaminant breakthrough or**
- 2) a cartridge change schedule is implemented based on cartridge service data including desorption studies (unless cartridges are changed daily), expected concentration, pattern of use, and duration of exposure have been established, and the chemical does not have a ceiling limit."**

***(e) Medical evaluation -***

**(e)(1) Duration of respirator use**

It is not necessarily the duration of respirator use that could trigger health issues. While the amount of time a respirator is worn better identifies a routine user, the ability to determine the need for a medical examination based solely on this is felt inadequate. We support that a written opinion be required for all employees who would utilize respiratory equipment.

**(e)(1)(ii): substances that the employee will be exposed to.**

OSHA does not provide documentation to support how this information can be used

to determine if an employee is physically capable of using a respirator is not clear. It may be more appropriate to replace the request for substances with one for the type and frequency of impervious clothing (which could add to heat stress which can have impact on the cardiopulmonary systems).

(e)(3) Frequency of medical status review

We support the frequency recommended in the ANSI Z88.6-1984 standard. In addition to this, the inclusion of "*whenever an employee experiences unexplained difficulty in breathing.*" This seems to be more appropriate wording than "...at any time the employee experiences unusual difficulty breathing...."

(e)(3) Written physician's opinion

We agree, in principle, that a physician should always review the information from which a written opinion is created.

Medical Removal: OSHA has requested comment on the appropriateness of including employment protection provisions for employees who can not use respirators for medical reasons. The inclusion/development of a protection policy could be in conflict with Federal and State laws that already exist (ADA).

Medical Evaluation

OSHA had requested comments on three options, one which is based on a questionnaire. The use of a questionnaire will address the concerns of those with less

burdensome respirators yet satisfying the need to conduct a more in-depth examination under certain conditions. This would also allow companies who wish to have a more enhanced program to do so.

#### Medical Evaluation for Employees Using Less Burdensome Respirators

Any employee that would be required to use respiratory equipment (even for escape or voluntary use) should receive some basic type of evaluation.

#### Role of Health Professionals Other than Physicians

Vulcan Chemicals supports the use of health professional under the supervision of a licensed physician for initial and periodic medical evaluations.

#### **(f) Fit testing**

##### **(f)(2) Frequency of fit testing:**

OSHA is proposing that fit testing be performed before an employee first starts wearing a respirator in the work environment and at least annually thereafter. But will retain semi annual fit testing for substance specific standards, e.g. asbestos. OSHA in keeping the 6 month testing in the asbestos standard, has not been consistent. Moreover, OSHA has not demonstrated that more frequent testing gives any benefit.

##### **(f)(3) and (f)(6)(iii): Fit testing of all tight fitting respirators**

In sections (f)(3) and (f)(6)(iii), OSHA requires that air supplied respirators be either qualitatively or quantitatively fit tested. The proposal specifies that only the mask needs

to be tested, not the entire respirator unit. OSHA based the requirement to fit test these masks because *"...comments suggested that it is appropriate to require the fit testing of positive pressure devices since it has been determined that positive pressure respirators do not always maintain positive pressure. Further, the possible adverse effects of the negative pressure spikes can be minimized by providing positive pressure respirator users with good fitting facepieces. Therefore, it has been suggested that quantitative fit testing should be required for positive pressure equipment."*

Available data demonstrates that although negative pressure can occur inside the facepiece of pressure demand SCBAs, the length of excursion is so brief that the effect on protection is limited. This effect would even be less for pressure demand air line respirators that are given an assigned protection factor of 1000 by ANSI (and a proposed 2000 by OSHA). For these reasons we believe OSHA has not demonstrated a need for fit testing of all tight fitting respirators. We agree that negative pressure respirators need to be fit tested.

**(f)(4) Alternative fit test procedure**

OSHA is proposing to allow the use of qualitative or quantitative fit tests other than the methods specified in section 1 of Appendix A provided they are validated to provide equivalent or better reliability. Both the qualitative and quantitative validation criteria for new fit test methods require that the fit test data submitted for approval demonstrate statistically that the fit test method be as protective as an currently approved QNFT. OSHA defines this as requiring the test to identify 95% of users with fit factors less than ten times the assigned protection factor at a 95% confidence level. OSHA has not

defined the statistical test to be used. Based on the references, we assume that the test uses binomial theory.

We do not agree that alternative fitting methods need to be judged by such stringent statistical methods. First, as OSHA states, the existing qualitative fit test methods do not meet OSHA's performance levels. Therefore why should acceptance criteria be more stringent for new protocols.

Second, the level of confidence (95% must fail with a 95% confidence) results in a probability of accepting a test that does not perform to the standards of only 0.25%. This is a much stricter standard than the performance of the oil mist quantitative fit test that is being used as the "gold standard". The quantitative system has a measurement bias of at least 17% and includes a measurement error of about 65% for particles with a diameter of 1  $\mu\text{m}$  due to lung losses. It is inappropriate to require such a high degree of statistical certainty for a test when it is compared to a rather inaccurate measurement system.

We suggest that OSHA require that the qualitative tests detect at least 95% of people with fit factors less than 10 times the assigned protection factor for the type of respirator it is designed to evaluate. We also suggest that a range of poor fitting respirators be used in the evaluation which includes those with fit factors both above and below the criterion. We also suggest that the 90% confidence interval be supplied so that the employer can estimate the reliability of the data that supports the fit test method.

### Comments on Fit Test Records/Documentation

OSHA requested comments on the burden associated with maintaining fit test records and on the feasibility of fit test certification as an alternative to the recordkeeping currently required in the proposal. As a practical matter, the fit test certification option provides little practical relief from the recordkeeping requirements currently in the proposed rule. To maintain a fit test program will require a minimum of record keeping. For example, information such as a date, employee name and respirator assigned is needed just to schedule a repeat fit test. Therefore, Vulcan Chemicals does not support certification alternative.

#### *(g) Use of respirators*

##### *(g)(3) Facial hair*

In the proposed rule, OSHA invited comments on the wording of the proposed provision of the standard concerning facial hair, and whether OSHA should require that employers provide respirators that do not rely upon a tight facepiece when employees had facial hair. We believe that the standard should simply state:

"A respirator, either positive or negative pressure, equipped with a facepiece (tight or loose fitting) shall not be worn if facial hair comes between the sealing surface of the facepiece or if the facial hair interferes with valve function."

**(h) *Maintenance and care of respirators -***

**(h)(2) Storage of respirators**

OSHA requested comment whether it was appropriate to keep the language on storage conditions in performance language. For example, temperature ranges are not specified. We agree that the current language should be maintained as written. The manufacturer's recommendations should be followed since there may be a particular storage requirement for a specific piece of equipment. To place storage requirements in specific language may actually contradict specific recommendations of the manufacturer.

**(i) *Supplied air quality and use***

OSHA requested comments on whether it should require carbon monoxide filters with continuous monitoring alarms for all breathing air compressors. We support the language in the ANSI standard that requires acceptance testing of the air from compressors. As noted by OSHA, the placement of the air intake is critical for any air compressor. Rather than require continuous monitoring, acceptance testing as described by ANSI can be used.

We also believe that the standard should require that purchased breathing air be testing for oxygen content by the following schedule or that the employer obtain a certificate of analysis for the air that is purchased.

## Substance Specific Standards: Respirator Selection

We also believe that the information on respiratory protection in each individual substance specific standard should be held to a minimum and the details contained in 1910.134 to avoid confusion for the employer. OSHA should publish as part of the standard the listing of APFs from the NIOSH RDL to avoid confusion and the need for each employer to maintain a separate copy.

### (o) *Appendixes* -

#### **Appendix A: Fit Testing Procedures (Mandatory)**

##### General

In the procedure for fit testing OSHA states that "...Another facepiece shall be selected and retested if the test subject fails the fit check tests." We disagree with this wording. Many times someone may try on a respirator and not have it adjusted properly and they are not able to pass a fit check. The language in Appendix A should be changed to allow for adjustment of the fit before a respirator is rejected outright as poor fitting.

##### Fit Test Exercises

OSHA is proposing test exercises consisting of normal breathing, deep breathing, turning head side to side, moving head up and down, talking out loud, grimace, bending over or jogging in place if the test unit is not large enough for the test subject to bend at the waist, and normal breathing. The exercises are to be done for one minute, except

the grimace is to be done for 15 seconds. We do not believe that the grimace or the bending over exercises should be included in the test exercise series. The grimace exercise has been added to check whether a respirator fit will return to an acceptable level after the seal is broken. As such it sounds as if this is a proper exercise to run. But of the qualitative tests it makes no sense. With the saccharin or isoamyl acetate tests, breaking the seal will result in a diminished ability to sense further leakage. The person being tested will not be able to determine if the respirator reseals on the face.

For the bending over exercise, OSHA allows substitution of a jogging exercise. These two exercises are very different in what would cause leakage. The bending exercise is a low impact exercise, while jogging causes a high vertical movement rate to the mask. We see no purpose or gain in knowledge of fit by requiring this type of exercise. In most of the workplace protection factor studies, the six test exercises that have been conducted with the bending and grimace exercises excluded. The results of these studies have been acceptable levels of performance. There is no data that suggests that any added benefit is gained by requiring more exercises.

OSHA also requires that the tests be done for one minute. OSHA provides no data that an exercise period of one minute provides any benefit over at est period of 30 seconds. Studies that validated the isoamyl acetate and saccharin fit tests were also done with 30 second exercise periods. Therefore there is ample evidence that a 30 second exercise period is sufficient to determine whether a respirator fits adequately. The reason we support the 30 second exercise period besides no demonstrated advantage for a one minute exercise, is a desire to keep the training as a valuable experience. When

fit testing with minute exercises, employees tend to lose interest in what is occurring since they do not sense any change in fit or reason for the long time period.

In summary we support the use of six standard fit test exercises, normal breathing, deep breathing, moving head from side to side and then up and down, talking and normal breathing. The exercises are necessary only for a 30 second period to access adequate fit. OSHA has not demonstrated that additional exercises or time is required.

#### Quantitative fit testing requirements

We disagree that three fit tests are needed for quantitative fit testing. The workplace protection factor studies that used quantitative fit testing as the means of qualifying people for the study all used a single quantitative fit test. The results of the studies showed for half masks and full facepiece respirators showed that the assigned protection factor was achieved. Thus a single test is adequate to qualify a respirator for use.

The qualitative fit tests listed in the proposal do not require that three tests be run. It does not make sense to require more tests when quantitative fit testing is done. The studies that used a qualitative fit test to qualify respirators for use also showed acceptable levels of performance.

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

### **Appendix C (A) Medical History**

#### **(A)(6) Previous Occupations**

OSHA does not provide documentation to support the inclusion of this information. It is unclear how a persons previous occupations can be used to determine an employees' current ability to use a respirator.

### **Appendix C (B) Medical examination should assess:**

#### **(B)(1) Hearing ability**

While the use of certain respiratory equipment may impair a persons ability to hear surrounding sounds, the inclusion of this item doesn't seem appropriate. Conditions that a respirator may cause/aggravate should be a part of the training an employee receives concerning the limitations of the respirator they are expected to use.

### **General Comments on Appendix C**

**Tachycardia:** Recommend this be added to section (B)(3) Cardiovascular system, Appendix C (non-mandatory).

**Appendix C (non-mandatory):** Elements 1-7 of part A and elements 1-8 of part B

should be retained and all elements be kept non-mandatory. The development of a section that would list health conditions that should be considered during an evaluation seems appropriate.

Vulcan Chemicals respectfully petitions OSHA to consider these comments.

Sincerely,

**VULCAN CHEMICALS**

A handwritten signature in black ink, appearing to read "Eric C. Phillips". The signature is written in a cursive, flowing style.

Eric C. Phillips

Division Health and Safety Coordinator