

B. F. Goodrich Chemical Company

A DIVISION OF THE B. F. GOODRICH COMPANY

8100 OAK TREE BOULEVARD · CLEVELAND, OHIO 44131 · PHONE 216-524-0200

JOHN L. NELSON

DIVISION VICE PRESIDENT, MANUFACTURING

April 4, 1975

Mr. John H. Stender
Assistant Secretary of Labor
U. S. Department of Labor
Occupational Safety and Health Administration
Washington, D. C. 20210

Dear Sir:

Pursuant to Section 6(d) of the Williams-Steiger Occupational Safety and Health Act of 1970 (84 Stat. 1596: 29 USC .655), the B.F. Goodrich Chemical Company, 6100 Oak Tree Boulevard, Cleveland, Ohio 44131, respectfully requests a variance from the requirements of 29 C.F.R. 1910.93q(g)(4)(vi) concerning respiratory protection required for vinyl chloride workers in atmospheric levels not over 10 ppm. The standard was effective April 1, 1975.

The addresses of the places of employment that will be affected by this application are as follows:

B.F. Goodrich Chemical Company
P. O. Box 134
Avon Lake, Ohio 44012

B.F. Goodrich Chemical Company
P. O. Box 122
Avon Lake, Ohio 44012

B.F. Goodrich Chemical Company
P. O. Box 307
Calvert City, Kentucky 42029

B.F. Goodrich Chemical Company
Box 15
Henry, Illinois 61537

B.F. Goodrich Chemical Company
P. O. Box 9077
Long Beach, California 90810

B.F. Goodrich Chemical Company
P. O. Box 954
Louisville, Kentucky 40201

B.F. Goodrich Chemical Company
P. O. Box 400
Pedricktown, New Jersey 08067

The B.F. Goodrich Company
Research and Development Center
Brecksville, Ohio 44141

The applicant certifies that employees who would be affected by the variance have been notified of this application by providing a copy of it to their authorized employee representative, and/or by posting a copy at all places where notices to employees are normally posted. Employees have also been informed of their right to petition the Assistant Secretary for a hearing.

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The respiratory equipment we plan to utilize for levels not over 10 ppm is shown in the attached photograph. When the atmospheric vinyl chloride level is less than 10 ppm, the half mask with canister attached will be used, at the employees discretion. If the alarm on the continuous monitoring system is activated because a 10 ppm vinyl chloride level has been reached, the employee would disconnect the canister and connect to an air supply. The mask and the breathing hose are the same as utilized with the above Type C air respirator. The canisters which will be utilized are the M.S.A., Welsh, or Acme types, which are approved by NIOSH for 25 ppm, as set forth in 30 C.F.R. 11.202. The primary half mask which will be furnished to employees is the M.S.A. Custom Comfo air line respirator number 93520, which has a Bureau of Mines approval 19B-34B, and number 84612 which has a Bureau of Mines approval 19B-34A. The Welsh and Acme half masks are presently being evaluated. These masks, upon satisfactory evaluation, will be provided to employees who fail the fit test with the M.S.A. Custom Comfo mask, or have a personal preference. The canister utilized will be from the same manufacturer as the mask, unless a problem of canister availability is encountered. Fittings on the M.S.A., Welsh, and Acme canisters satisfactorily fit the breathing hose connection. Employees will be permitted to wear these masks with canisters only in concentrations less than 10 ppm. A continuous monitoring and alarm system is provided as required in paragraph (g)(6)(ii), which will alert employees that the concentration exceeds 10 ppm, and that he must evacuate the area or don an air supplied respirator. This alarm level may be dropped to a lower level as further engineering and work practice controls reduce the number of excursions.

The need for this variance can best be explained by reviewing our total respiratory protection program. The standard requires the use of approved, open-circuit, self-contained breathing apparatus, pressure demand type, with full facepiece for atmospheric concentration levels which are unknown or above 3,600 ppm. The B.F. Goodrich Chemical Company will require that self-contained breathing apparatus be worn for levels which are unknown or above 100 ppm. We have also provided a continuous monitoring and alarm system, as required in paragraph (g)(6)(ii), which will alert employees that the concentration exceeds 100 ppm, that he must evacuate the area or don a self-contained breathing apparatus. The standard also requires the use of approved Type C, supplied air respirator, continuous flow type, with half facepiece in levels over 25 ppm vinyl chloride, but cannot be worn in levels over 1,000 ppm vinyl chloride. B.F. Goodrich Chemical Company will require that an air supplied respirator be worn in levels between 25 ppm to 100 ppm vinyl chloride. We have also provided a continuous monitoring and alarm system as required in paragraph (g)(6)(ii), which will alert employees that the concentration exceeds 25 ppm, and that he must evacuate the area or don an air supplied respirator. The air supplied respirator will also be required to be worn on particular jobs or operations which by previous monitoring have indicated a possible excursion greater than 25 ppm. At various times, for specific jobs, or because of employee personal preference, other types of respiratory equipment may be utilized in accordance with paragraph (g)(4).

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Because of the mobility required in most jobs, a lightweight portable type respirator is needed for low concentrations. This equipment will be provided in accordance with paragraph (g)(1), in that for the initial period of one year, the wearing of respirators shall be at the discretion of each employee for exposures not in excess of 25 ppm. The most recent results from our continuous area monitoring indicate that less than 6% of the readings are above the 10 ppm level.

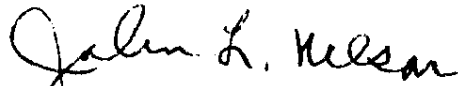
Regarding the merits of the application, the applicant states that no cartridge respirators, as specified in paragraph (g)(4)(vi)(C), presently have been approved jointly by the Mining Enforcement and Safety Administration, Department of the Interior, and the National Institute for Occupational Safety and Health. Such equipment cannot be made available to employees until this equipment is jointly approved by these agencies and can be acquired from the manufacturers of such equipment.

We have also found from past experience that employee acceptance of a half mask is much better than the full facepiece mask. Employees find the half mask to be much more comfortable and that they can easily wear prescription safety glasses and head protection, when required. With this system, each employee assigned to regulated areas is issued his personal mask which is used with the canister or with the air supplied respirator. The switch can be made from the canister mask to an air supplied respirator relatively quickly, without the necessity for the employee to return to a safe area to obtain a different mask for a higher level of vinyl chloride. The most recent results from our continuous area monitoring indicate that less than 6% of the readings are above the 10 ppm level. We feel that the respiratory program we plan to provide with this variance is a safer system for employee protection than required in 1910.93q (g)(4)(vi).

This practice of utilizing the half mask in conjunction with an approved canister is based on research conducted by the Los Alamos Scientific Laboratory for "Respirator Selection Guide for Protection Against Airborne Contaminants for NIOSH Criteria Documents", refer to the attached table (XVII). This guide points out that an air purifying respirator with a half facepiece is suitable for levels ten times the TWA for an eight-hour day. Therefore, we feel that this system is equivalent to the apparatus required in paragraph (g)(4)(vi)(C), and will insure the safety of the employees following our procedures.

Respectfully,

B.F.GOODRICH CHEMICAL COMPANY
a Division of The B.F.Goodrich Company



John L. Nelson
Division Vice President, Manufacturing

JLN/ja

Attachments

NGC36167

TABLE XVII

RESPIRATOR SELECTION GUIDE¹ FOR PROTECTION AGAINST AIRBORNE CONTAMINANTS²
FOR NIOSH CRITERIA DOCUMENTS

Type Respirator, Filter, ³ Facepiece ⁴	Selection Guide ⁵ Multiples of TWA for 8 hr. day,
<u>Air Purifying Respirators</u>	
Single Use, ⁶ Dust ⁷	5
Air-purifying, Dust, 1/4 or 1/2 facepiece	10
Air-purifying, Fume, ⁸ 1/4 or 1/2 facepiece	10
Air-purifying, Hi-Eff. ⁹ , 1/2 facepiece	10
Air-purifying, Hi-Eff., FF facepiece	100
Powered Air-purifying, with Applicable Particulate Removing Filter	200
Powered Air-purifying, with Hi-Eff. Filter, Hood or Facepiece	1000
<u>Atmosphere-Supplying Respirators</u>	
Supplied Air-Demand - 1/2	10
Supplied Air-Demand - FF	100
Supplied Air-P-D in PP mode, 1/2 ¹⁰	1000
Supplied Air-P-D in PP mode, FF ¹¹	2000
Supplied Air-Continuous flow, 1/2 ¹⁰	1000
Supplied Air-Continuous flow, FF ¹¹	2000
Supplied Air-Continuous flow, Hood ¹²	2000
Supplied Air-Continuous flow, Suit ¹³	2000
SCBA-Air-Open Circuit, Demand, FF	100
SCBA-Air-Open Circuit, Positive Pressure, FF ¹⁴	10000+
SCBA-Air-Open Circuit, P-D, PP mode, FF ¹⁴	10000+
<u>Combination Respirator</u>	
Any combination of air-purifying and atmosphere supplying respirator.	Selection Guide for type and mode of operation as listed above.

FOOTNOTES FOR RESPIRATOR SELECTION TABLE XVII

1. The Selection Guide is proposed for use in the preparation of recommended respirators for specific NIOSH Criteria Document. An illustration of its current use is in proposed criteria documents for silica dust, fibrous glass, sulfur dioxide, benzene, sulfuric acid mist, etc. Final criteria documents for asbestos, beryllium, CO, and PB contain errors and/or have contradicting statements relative to protection provided.
2. Contaminants include gases, vapors, dusts, fumes, and mists. Each type of specific contaminant would have to be considered as to the size if it is a dust, fume, or mist, and the sorbent if a gas or vapor. Example: sulfuric acid

mist criteria—concentrated sulfuric acid mist gives off SO₃ which is very fine and requires a high efficiency filter. It is known that dust filters are satisfactory for dilute sulfuric acid mist.

3. The filter may be either a dust or chemical filter or a combination. Where B of M approvals exist, such as chemical cartridge respirator for organic vapors, SO₂, etc., they should be specified. Where approvals do not exist it is suggested that specific sorbents be specified. Example: Iodized charcoal for mercury vapor.

4. Tests made at LASL during the past five months indicate that when considering facepiece leakage only, there is no significant difference between 1/4 mask and a 1/2 mask. Based on facepiece leakage only, where 1/4 and 1/2 facepieces fitted with high efficiency filters have been tested on a 16-man panel representative of 95% of U. S. male face sizes, they all meet the requirements for protection up to 10X TLV.
5. The term "Selection Guide" has replaced "Protection Factor" as originally proposed in September, 1972. This suggested change is to emphasize that their main purpose is for selection of a given type of device when the concentration is known or projected to be a certain level. It is recognized that they are the equivalent of a protection factor. I wish to recognize that several individuals have reviewed my September, 1972, proposed selection guide and made valuable recommendations. They are R. Schutz, E. Kloos, A. Gudeman, and W. Burgess. Many of the changes made reflect their recommendations; however, I wish to emphasize that the numbers given in no way constitute unanimous approval of this group.
6. A single use or disposable respirator with valves approved under Schedule 21B is approved for silica dust, asbestos, etc. and dusts with a TLV >0.1 mg/m³, including but not limited to lead, cadmium, etc. A single use valveless approved under Part 11 (21C) excludes toxic dusts. Respirator-man tests and filter tests made at LASL show overall respirator efficiency on the 3 currently approved, single use respirators ranging from 70 to 90%. Therefore, it is recommended that they only be recommended for protection up to 5X TLV of silica dust, asbestos, etc. and exclude their use for toxic dusts such as lead, Cd, etc.
7. Dust filter in this table refers to a dust respirator approved by the silica dust test, and includes all type of media, that is, both non-degradable mechanical type media and degradable resin-impregnated wool felt media.
8. Fume filter in this table refers to a fume respirator approved by the lead fume test.
9. High efficiency filter in this table refers to a high efficiency particulate respirator. The filter must be at least 99.97% efficient against 0.3 μ m DOP to be approved.
10. A positive pressure supplied air respirator equipped with a 1/2 mask facepiece does not provide eye protection. Thus, it is proposed that the Selection Guide should be 1/2 that of the similar device equipped with a full face mask.
11. A positive pressure supplied air respirator equipped with full facepiece provides eye protection but is not approved for use in atmospheres immediately dangerous to life. It is recognized that the facepiece leakage when a positive pressure is maintained should be the same as a SCBA operated in the positive pressure mode. However, to emphasize that it basically is not for emergency use, the Selection Guide is limited to 2,000.
12. The design of the supplied air hood (with a minimum of 6 cfm of air) may determine its overall efficiency and protection. For example, when working with the arms over the head, some hoods draw contaminate into the hood breathing zone. This may be overcome by wearing a short hood under a coat or overalls. Other limitations specified by the approval agency must be considered before using in certain types of atmospheres.
13. Design of suit may limit protection factor.
14. The SCBA operated in the positive pressure mode has been tested on a selected 16-man panel and the facepiece leakage recorded as $<0.01\%$ penetration, therefore, I have suggested 10,000+ because at this time the lower limit of detection does not warrant listing a higher number. Several of the proposed criteria documents simply recommend a positive pressure SCBA for any concentration greater than a specified concentration. I believe this is consistent with the 10,000+ that is proposed. We must have an emergency device for use in unknown and unlimited concentration. However, other limitations such as skin absorption of HCN or tritium must be considered.

