



**BWX Technologies, Inc.**

Babcock & Wilcox, a McDermott company

0507  
J. Craig

63FR 40141  
July 27, 1998



Naval Nuclear Fuel Division

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September 11, 1998  
98-092

Secretary  
ATTN: Rules and Directives Branch  
Division of Administrative Services  
Office of Administration  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

Subject: Draft Regulatory Guide DG-8022 (Proposed Revision 1 to Regulatory Guide 8.15), "Acceptable Programs for Respiratory Protection."

Gentlemen:

BWX Technologies, Inc., Naval Nuclear Fuel Division, provides the following comment regarding the draft Regulatory Guide DG-8022 (Proposed revision 1 to Regulatory Guide 8.15), "Acceptable Programs for Respiratory Protection."

BWXT urges NRC to add to Section 4.12, "Emergency & Escape Equipment" of the referenced Draft Regulatory Guide, provisions for the allowance of combination full face-piece, pressure demand, supplied air respirators (SAR) with auxiliary self-contained air supply.

BWXT believes the addition of this type of apparatus is justified by the following:

1. The National Institute of Occupational Safety & Health (NIOSH) has provisions for approving the reference SAR for emergency entry into hazardous environments. 42 CFR 84.70 states:
  - (b) The following respirators may be classified as designed and approved for use during emergency entry into a hazardous atmosphere:
    - (1) A combination respirator which includes a self-contained breathing apparatus; and
    - (2) A Type "C" or Type "CE" supplied air respirator, where;
      - (i) The self-contained breathing apparatus is classified for 3, 5, or 10 minutes service time and the air line supply is used during entry; or
      - (ii) The self-contained breathing apparatus is classified for 15 minutes or longer service time and not more than 20 percent of the rated capacity of the air supply is used during entry.

U.S.N.R.C.  
Secretary

-2-

September 11, 1998

2. NIOSH's "Respirator Decision Logic" dated May, 1987, Tables 1, 2, and 3 provide assigned protection factors (APF). Tables 1-3 each state the following for an APF of 10,000:

"Any self-contained respirator equipped with a full face-piece and operated in a pressure demand or other positive pressure mode."

"Any supplied-air respirator equipped with a full face-piece operated in a pressure demand or other positive pressure mode in combination with an auxiliary self-contained breathing apparatus operated in a pressure demand or other positive pressure mode."

3. OSHA has recognized the SAR is capable of providing the same level of protection of an SCBA in its recent revision to the general industry respiratory protection regulations. 29 CFR 1910.134(d)(2) "Selection of Respirators, Respirators for IDLH atmospheres" states:

- (i) The employer shall provide the following respirators for employee use in IDLH atmospheres:
- (A) A full face-piece pressure demand SCBA certified by NIOSH for minimum service life of thirty minutes, or
  - (B) A combination full face-piece pressure demand supplied-air respirator (SAR) with auxiliary self-contained air supply.

NIOSH and OSHA consider the combination full face-piece, pressure demand, supplied-air respirator, with auxiliary self-contained air supply, to provide a user with adequate protection for entry into environments where the contaminant or concentration is unknown. This type of respirator is widely used throughout the nuclear industry and we believe its continued use should be recommended in Regulatory Guide 8.15.

Sincerely,



Arne F. Olsen  
Licensing Officer

BFR 40741  
July 27, 1998

DS09  
J. Craig

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RULES DIVISION  
US NRC

(2)



September 21, 1998

Rules and Directives Branch  
Division of Administrative Services  
Office of Administration  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

**Reference:** Draft Regulatory Guide DG-8022

Dear Sir or Madam:

Minnesota Mining and Manufacturing Company (3M) through its Occupational Health and Environmental Safety (OH&ES) Division is a major manufacturer and supplier of respiratory protective devices. It is from this base of expertise and acquired knowledge that we offer our comments on the Draft Regulatory Guide DG-8022.

The issuing of the Draft Guide for comment prior to finalizing the proposed NRC Respiratory Protection Standard, 10 CFR part 20, seems a bit awkward. It requires interested parties and stakeholders to comment twice on the same issues. Finalizing the standard and then issuing a guide based on the final rule would have created less comparison and rewrite by the agency.

Because of the timing, many of our comments on DG-8022 are redundant to our comments on 10 CFR part 20. However, the comments on 10 CFR part 20 are more detailed and we request they be considered in both the rulemaking and the rewrite of DG-8022.

We appreciate the opportunity to add our comments and request due consideration of the issues discussed.

Sincerely,

Ronald E. King  
Regulatory Affairs Manager  
Occupational Health and Environmental Safety Division

## Specific Comments on Draft Regulatory Guide DG-8022

### Page 3:

The draft guide notes that a licensee must comply with OSHA regulations for nonradiologic hazards. However, many of the provisions of the proposed 20.173 are quite different from the OSHA regulation. This will add confusion, require extra work and is not in the best interest of employers nor employees.

### Page 13: 4.6 Half Mask Respirators (APF = 10)

NRC is defining a "half mask" respirator as one that has a four-point suspension and an elastomeric face-sealing surface. Additionally, NRC requires a filter efficiency of 99%, a properly performed fit check and all other requirements of a respirator program to be in place in order to consider its use acceptable. We find that NRC's beliefs, expressed in the above description, are based on an incorrect, subjective view of the performance of half facepiece respirators.

NRC states that an elastomeric sealing surface enhances the ability of respirator fit but presents no data, nor technical information to support the opinion. If this view were correct, we would see a difference in performance among those respirators with "enhanced" sealing surfaces and those without. When data from workplace protection factor studies are examined, there is *no statistically significant* difference in performance.<sup>1</sup> This result is not unexpected. Leakage into a respirator can be through the faceseal, mechanical defects and filter penetration. Assuming a well run respirator program mechanical defect leakage should not be an issue in any type of respirator. Filter performance should not differ because each type must pass the same NIOSH certification test. Faceseal performance should not be different since the same type of fit test is used to qualify users. Hence, poor fitting respirators would not be used. We find no reason why NRC should continue the myth that a difference in performance exists between respirators with or without an elastomeric sealing surface.

NRC requires a filter efficiency of at least 99%. No technical reason is given for this requirement nor data presented to justify it. A 95% filter is probably adequate for any use with a half facepiece respirator and may provide a higher level of protection than a 99% filter.

The NIOSH 42 part 84 filter tests are designed to be worst case. The particle size, its distribution, neutralization, flow rate and filter pretreatment all are

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<sup>1</sup> Nelson T. J.: The Assigned Protection Factor of Ten for Half Mask Respirators, *Am. Ind. Hyg. Assoc. J.* 56(7) 717-724 (1995)

designed as worst case parameters. A filter that passes any one of the three filter efficiencies will always perform better in the workplace. Therefore, for a half facepiece respirator, a 95% filter will perform at a higher efficiency than the test criteria. For example, filter efficiency for a 2  $\mu\text{m}$  particle will be more than 99%.

Increasing filter efficiency leads to an increase in filter breathing resistance. Increased breathing resistance leads to an increase in face seal leakage. Figure 1 below shows this relationship. A leak rate of 500 cc/min is equivalent to a fit factor of ~ 50 to 100. An increase in breathing resistance of 2 mm with a leak rate of 500 cc/min would decrease the fit factor to ~30- 60. The increase in face seal leakage may negate any decrease in exposure that could occur by use of a filter with higher filter efficiency.

#### **Page14: 4.7 Single-Use Disposable Respirators (No APF)**

NRC proposes to allow the use of single-use disposable respirators without assigning an APF. If the licensee demonstrates that a fit factor of 100 is achieved through proper fit testing, then they can use used with an APF of 10. We find the comments made by NRC describing "single-use disposable" respirators to be incorrect and confusing. Apparently, NRC believes that this type of respirator is not capable of providing reliable levels of protection but provides no technical reference or data to support this belief.

Since the NIOSH approval category for "single-use" no longer exists in 42 CFR part 84 and "disposable" is an indeterminate term, NRC would be better served to define and refer to "filtering facepiece respirator".

The characteristics listed by NRC for "single-use disposable" respirators include:

- made of a relatively thin filter media,
- packaged 10 or more in a box rather than singly,
- filter efficiency is less than 99%.

Also it is stated that fit checks are difficult to perform effectively, and therefore not required. The guide also states that the devices should be discarded each time they are removed.

We see no reason how the characteristics listed reflect on performance of a respirator. The filter media is not only similar in thickness to that used in replaceable filters used on elastomeric facepieces, but is thicker than the filter media used in the traditional high efficiency (HEPA) cartridge. The filter material passes the same NIOSH certification tests which measure efficiency, not thickness. Packaging does not effect performance. Many types of

respirator filters have efficiency less than 99%, e.g. N95 filters for the traditional dual cartridge elastomeric respirator.

Fit checks on filtering facepiece types of respirators are just as effective in identifying inadequately fitting respirators as those done with elastomeric type facepieces.<sup>2</sup>

As noted by Myers,

*"Fit check methods applied to the DFF respirators were found to be equivalent to the fit check methods applied to the EF respirator by all criteria used in the study to assess fit checks. The sensitivity of the fit check to detect bad donnings of previously fit tested respirators averaged 96% for all four respirators. Conversely, the percent of subjects accurately identifying properly donned respirators with the fit check averaged 66% for all four respirators. Considering that fit check methods are very simple to perform and require no ancillary equipment, the sensitivity and specificity for these methods are remarkably good."*

Requiring a user to discard a filtering facepiece each time it is taken off implies that they cannot be reused. This is counter to the advice given by NIOSH where a filtering facepiece may be reused until it becomes damaged.<sup>3</sup>

In summary, we believe that NRC should assign an APF of ten to all half facepiece respirators as is done in the ANSI 88.2 (1992) standard. There is no new information that was not reviewed by the Z88.2 committee that supports NRC's view on "single-use disposable" respirators.

#### **Page 15: 4.8 Respirator filters**

As noted above, we see no reason to require a filter efficiency of 99% for negative pressure respirators. Also, for powered air purifying respirators, it would be clearer to state that NIOSH is only approving HEPA filters and no longer allows the sale of dust/mist or dust/fume/mist filters. While the terminology "dust-fume-mist HEPA" may be technically correct, it will be confusing to most of the users.

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<sup>2</sup> **Myers, W.R., M. Jaraiedi, and L. Hendricks:** Effectiveness of Fit Check Methods on Half mask Respirators. *Appl. Occup. Environ. Hyg.* 10(11):934-942 (1995).

<sup>3</sup> **National Institute for Occupational Safety and Health:** *NIOSH Guide to the Selection and Use of Particulate Respirators Certified Under 42 CFR 84.* (DHHS/NIOSH Pub. No. 96-101). Washington, D.C.: U. S. Department of Health and Human Services/ National Institute for Occupational Safety and Health, 1996.

**Page 19: 5.3 Fit Testing**

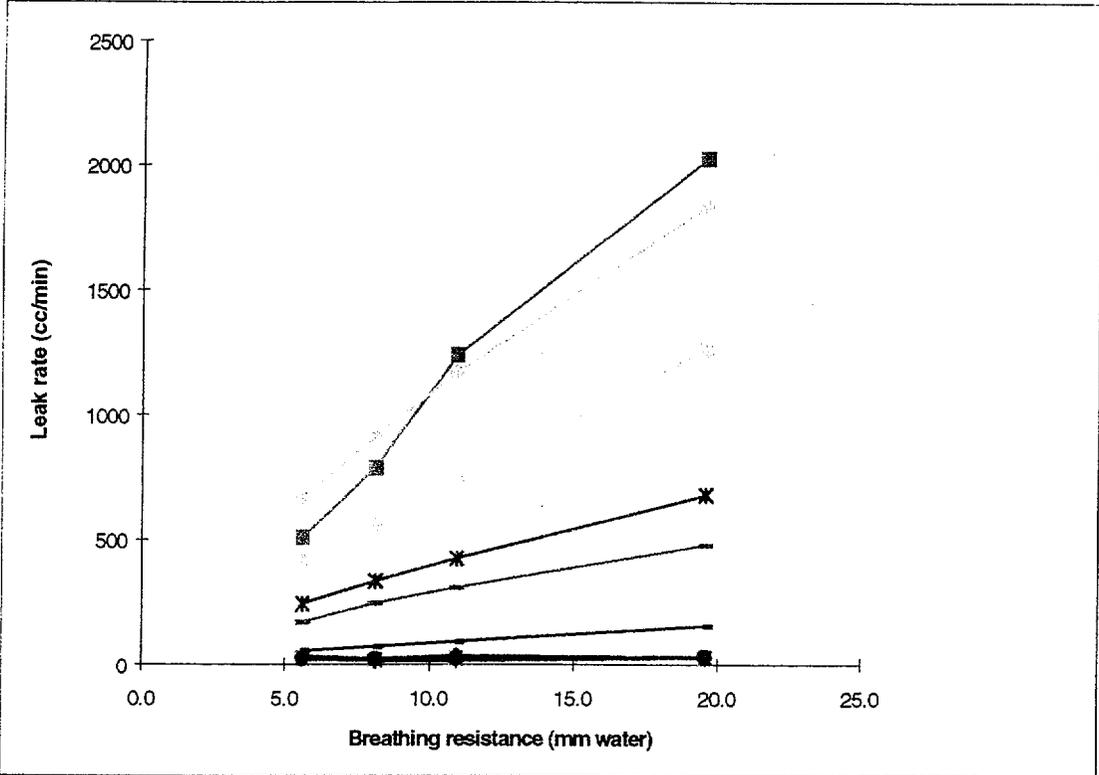
NRC is allowing fit testing to be performed every three years while OSHA and the ANSI Z88.2 standard require an annual fit test. We have seen no evidence that would allow NRC to rely on a three year fit test interval.

NRC is allowing the use of the irritant smoke fit test. Although OSHA allows this fit test to be used, we do not believe it has been adequately evaluated. First, there is no documentation of the concentrations produced during the initial sensitivity test and during the fit test. The procedure permitted by OSHA has no controls on these two test procedures. Second, when OSHA adopted the irritant smoke test, the comparison testing with a QNFT used a fit factor of 10 (not 100) as the test criteria. For these reasons we do not believe that NRC should continue to allow the use of the irritant smoke test.

**Page 23: 6.5 Breathing Air quality**

The ANSI/CGA standard has been revised; the current version carries a date of 1997.

Figure 1: Leak rate (cc/min) at various breathing resistance's (mm of water)





# WYOMING MINING ASSOCIATION

DS09  
J-Clair

CFR 4014  
July 27, 1998 (3)

September 30, 1998

U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555-001

Attention: Rules and Directives Branch

Subject: Wyoming Mining Association Comments on "Draft Regulatory Guide DG-8022, Proposed Revision 1 to Regulatory Guide 8.15, "Acceptable Programs For Respiratory Protection" July 1998

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The Wyoming Mining Association (WMA) is an industry group that includes members from the uranium production industry in Wyoming and Nebraska. The Wyoming Mining Association (WMA) is a statewide mining organization whose mission is to communicate information on the significance of a healthy mining industry. WMA will promote the overall industry through active involvement in the legislative process, regulatory policy development, public education, and relevant public policy forums.

The WMA represents bentonite, coal, gold, trona and uranium companies and the mining associates (vendors, suppliers and contractors) in Wyoming. Wyoming leads the nation in the production of bentonite, coal, soda ash produced from trona, and uranium. Our membership consists of 32 mining companies, 121 supply and 5 electrical utility companies. Wyoming trona mines produce 90% of the national soda ash. Wyoming coal mines produce about 25% of the nations supply of coal.

Based upon a thorough review of the Draft Regulatory Guide DG-8022, "Acceptable Programs For Respiratory Protection" July 1998, WMA believes that certain changes, if implemented in their current form, would have potential negative impacts on NRC-licensed uranium production facilities. The attached comments discuss the aspects of the Draft Regulatory Guide that are of concern to the WMA.

The WMA appreciates the opportunity to comment on the Draft Regulatory Guide.

Sincerely,  
WYOMING MINING ASSOCIATION

Marion Loomis  
Executive Director

# **Wyoming Mining Association**

## **Comments on Draft Regulatory Guide DG-8022**

**(Proposed Revision 1 to Regulatory Guide 8.15)**

### **"Acceptable Programs For Respiratory Protection"**

**July 1998**

#### **Introduction**

The following comments are submitted in response to the Draft Regulatory Guide DG-8022, proposed revision 1 to Regulatory Guide 8.15, "Acceptable Programs For Respiratory Protection" July 1998. These comments are based upon a review by the membership of the Wyoming Mining Association (WMA). WMA members are active in the uranium mining and milling industry and in the reclamation of shutdown facilities in Wyoming and Nebraska.

#### **Use of Engineering Controls**

In *Summary of Regulatory Requirements*, DG-8022 states that "...the use of respiratory protection devices should be considered only after other measures to limit intake are exhausted". In *Inappropriate Uses of Respirators*, DG-8022 states that the use of respirators is a misapplication for "...performing routine tasks or tasks that are accomplished frequently or repetitively, unless unusual circumstances exist". While the WMA recognizes that the use of respirators should be limited, this guidance suggests that any means of limiting exposure to airborne radioactive material, either reasonable or unreasonable, should be implemented before

the use of protective devices. This approach is not consistent with the position stated in ANSI Z88.2-1992. A stringent interpretation could present licensees with significant additional expense.

Current practice by WMA licensees has involved the use of all *practical* engineering controls to limit exposures to airborne radioactive materials. This approach has proven successful at controlling internal exposures. By implementing a stricter standard for the implementation of engineering controls, NRC may impose significant additional costs for licensees without a similarly significant reduction in internal exposures. In most cases, the engineering controls currently in use at uranium mining licensees have provided a reasonable reduction in exposure when compared with the cost of implementation. Most WMA licensees are at the point of diminishing returns with regards to additional engineering controls.

A significant portion of the draft regulatory guide deals with performance of ALARA evaluations to determine the need for respirator use. NRC states that the ALARA principle should be applied in a reasonable fashion and that licensees should weigh the reduction in the total effective dose equivalent (TEDE) with other factors, such as industrial safety risk due to wearing the device. This new guidance presents a reasonable, flexible approach to health physics practice. However, the language used in the *Summary of Regulatory Requirements* to "exhaust" all process and engineering controls is not consistent with this flexible approach.

Recommendation: NRC should revise the wording in the *Summary of Regulatory Requirements* to ensure that a stringent interpretation would not result in impractical efforts to implement process and engineering controls.

## **Recording Internal Exposures**

In *Application of Assigned Protection Factors*, DG-8022 states that if the "...APF of a respirator is greater than the multiple by which average ambient concentration of airborne radioactive material in the workplace exceeds the applicable DAC value, ...no record of internal exposure (DAC hours) or internal dose (mrem) need be kept, calculated, or retained". This does not appear to be consistent with the requirements for reporting from 10 CFR §20.1502(b)(1). Licensees are required to monitor intake and assess the committed effective dose equivalent for individuals likely to receive in excess of 10 percent of the applicable Annual Limit on Intake (ALI). The ALI is reached when an individual receives 2,000 DAC hours. Therefore, the threshold for reporting from §20.1502 is reached at 200 DAC hours. Licensees could issue the respiratory protection devices discussed in DG-8002 and exceed this level of exposure.

As an example, assume an area with an ambient airborne concentration at 25 times the DAC. A licensee could choose a respirator with an APF of 50, which would meet the criteria from DG-8002. By applying the APF of 50 to the concentration of 25 DACs, an individual would receive 0.5 DAC hours per hour in the area. After 400 working hours in a one-year period, the reporting threshold of 200 DAC hours, or 0.1 ALI, would be reached. Assuming the maximum potential time in the area during one year (2,000 hours), the individual would receive 1,000 DAC hours, or 0.5 ALI. This level of exposure clearly meets the regulatory requirement for recording of internal exposures.

Recommendation: It appears that the regulatory guidance is not consistent with the regulation. Licensees will need to continue to monitor intake and assess the committed effective dose equivalent for individuals likely to receive in excess of 10 percent of the applicable Annual Limit on Intake (ALI) as required in 10 CFR §20.1502(b)(1). NRC should review this guidance for compliance with the regulation.

## **Fit Testing**

This section states that qualitative fit testing (QLFT) is acceptable if it is capable of verifying a fit factor of 10 times the APF for negative pressure devices. The section goes on to state that the protocols contained in Sections B1 through B5 of Appendix A to 29 CFR 1910.134 may be used to develop QLFT procedures. However, the referenced OSHA standard does not define a "validated" QLFT protocol and does not provide the maximum fit factor that a particular protocol is capable of achieving.

ANSI Z88.2-1992 requires that fit tests be performed in accordance with ANSI Z88.10. At this time, ANSI Z88.10 is neither approved nor published. Z88.2-1992 states that the protocol given in the OSHA Asbestos Standard (29 CFR §1910.1001) should be followed until such time as Z88.10 is available. The Asbestos Standard does not provide the maximum fit factor achievable by particular QLFT protocols.

This section also states that persons administering irritant smoke QLFT protocols should be protected from exposure to the smoke. One of the methods recommended is the use of a containment chamber around the head and torso of the test subject. However, the referenced protocol from OSHA (29 CFR §1910.134 Appendix A, Section B5) specifically states "No form of test enclosure or hood for the test subject shall be used". Therefore, the guidance to use a hood on the test subject to protect the test administrator would not be consistent with the guidance to follow the OSHA protocols.

**Recommendation:** If the achievable fit factor values for particular QLFT protocols are available to NRC, they should be provided in the Regulatory Guide since they are not readily available from any of the referenced standards.

The recommendations provided by the Regulatory Guide to protect the test administrator during an irritant smoke QLFT should be consistent with the referenced protocol. Use of a hood or enclosure is not allowed in the referenced OSHA protocol. NRC should remove the reference to this OSHA protocol for irritant smoke QLFT.

DS09  
J. Craig

63FR 40141  
July 27, 1998

October 1, 1998



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Rules and Directives Branch  
Office of Administration  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555-0001

**Subject:** Comments on Draft Regulatory Guide DG-8022 (Proposed Revision 1 to Regulatory Guide 8.15), "Acceptable Programs for Respiratory Protection"

**Reference:** Volume 63, Federal Register, Page 40141 (63FR40141), dated July 27, 1998.

This letter provides Commonwealth Edison (ComEd) Company comments on the subject Draft Regulatory Guide noticed in 63FR40141. ComEd generally supports the Draft Regulatory Guide with the exceptions discussed in the comments below.

**Page 3:** Paragraph 1, end of line 4: "potection" should be "protection."

**Page 4, 7, 24:** NUREG 0041, "Manual of Respiratory Protection Against Airborne Radioactive Materials, " is referenced as to where to find more information on certain topics. However, since the revision to NUREG 0041 is not yet available, it is not possible to compare content of the Draft Regulatory Guide to that of the NUREG 0041. Thus, it is recommended that the comment period for the Draft Regulatory Guide not expire until after the draft revision for NUREG-0041 is issued for comment. Additionally, consideration should be given to elimination of NUREG 0041 since the information in this document is redundant to the information found in other industry documents.

**Page 7:** Section 2.2 indicates that a respirator-induced worker inefficiency factor of up to 15% may be used without further justification. It is ComEd's understanding that most nuclear power plant worker default inefficiency factors that are assigned range from 20 to 25% and that these factors are currently acceptable to the NRC as demonstrated during NRC plant inspections. Accordingly, it is recommended that the 15% value be changed to 25%.

**Page 8, 10, 11:** Section 2.3 and Section 3.6 make somewhat inconsistent statements regarding use of respirators for contamination control

purposes. Section 2.3 states that use of respirators as contamination control devices in high contamination areas is valid even when there is no clear impact on Total Effective Dose Equivalent (TEDE). Section 3.6 indicates that use of respirators for protection of surface contamination in excess of certain levels is inappropriate and a misapplication without additional justification.

**Page 12:**

Section 4.3, paragraph 1 - Respirators routinely available for use are already required to be inspected during cleaning and before each use. Respirators are also required to be stored in such a manner to prevent damage or deformation. Therefore, it is recommended that the requirement for a monthly visual inspection be deleted. The monthly inspection is considered to be an unnecessary burden if inspection is performed prior to storing them in plastic bags following cleaning, if stored as required. And per American National Standards Institute (ANSI) Standard Z88.2-1992, "American National Standard for Respiratory Protection," only respirators stored for emergency or rescue use require monthly inspections.

Section 4.3, paragraph 2 - A recommended addition in italics is included in this paragraph as follows: "Equipment used in conjunction with facepiece respirators (e.g., belt- or mask mounted air regulators, air supply hoses, portable distribution manifolds, etc) *that are routinely available for use* should be inventoried and functionally tested periodically.

Section 4.3, paragraph 3 - Emergency respiratory protection equipment has the potential to be used for radiological as well as nonradiological purposes at facilities. 29 CFR 1910.134 inspection frequency requirements for respirators for use in emergency situations, i.e., Self Contained Breathing Apparatus ((SCBA) and others) is monthly. This guide should meet the minimum occupational Occupational and Safety Health Administration (OSHA) requirements as it attempts to do in most other areas.

**Page 13:**

Section 4.6 - For clarification, change the title to, "Half-Mask Respirators with High Efficiency ( $\geq 99\%$ ) Filter Media (APF = 10)"

Section 4.6 - Change the first sentence to read, "A relatively new variation on the half-mask respirator is referred to variously as a 'reusable,' 'reusable-disposable,' '*disposable*,' or 'maintenance-free,' device."

**Page 14:**

Section 4.6, paragraph at the top of the page - A recommended change in italics is included in the next to the last sentence as follows. "They are acceptable to the NRC as long as they are made of high efficiency ( $\geq 99\%$ )\_filter media, a fit check can be properly performed by the wearer donning, and all other requirements (e.g., *medical evaluation, training, fit testing*) are fulfilled."

**Page 14, 15:**

Section 4.7 - For clarification, change the title to, "Single-Use Disposable Respirators with Filter Media Efficiency < 99%"

Clarification should be made that the reason why these single-use respirators may not be used with an associated protection factor is that their filter efficiency is less than 99%. However, if an employer issues them to an employee, they must still be used as a respirator. As such, the employer would be required to follow the requirements of 29 CFR 1910.134, including medical evaluations, training, and fit testing. There are allowances for employees to use these types of respirators upon request even though respiratory protection is not required, such as for nuisance dust.

Thus, there is an inconsistency between OSHA regulations and this Draft Regulatory Guide where the Draft Regulatory Guide relieves licensees of the requirement to medically screen and fit-test wearers of single-use respirators. It would be difficult for an employer to require employee medical evaluations and fit testing for use of this type of respirator under one regulation and not another.

The ability to obtain a fit factor with single-use respirators is the same as those in Section 4.6, because some of these models are available with plastic, rubber, or similar elastomeric material applied to the entire facepiece seal area.

October 1, 1998  
U. S. Nuclear Regulatory Commission  
Page 4

It is recommended that this section of the Draft Regulatory Guide discuss the issue of face sealing capabilities vs. non-face sealing capabilities of a respirator and how this affects the ability of disposable respirators to achieve a possible Assigned Protection Factor (APF) of 10.

**Page 18:** Section 5.1 – Information received from ANSI by ComEd indicates that ANSI Z88.6-1984 has been “withdrawn” and is no longer available from ANSI.

Section 5.1 - Include the recognition that following medical evaluations conducted in accordance with OSHA regulation 29 CFR 1910.134 would meet the requirements outlined in this Draft Regulatory Guide.

**Page 20:** Section 5.3, paragraph at the bottom of the page - Delete the last paragraph. More than one satisfactory fit is no longer a requirement in 29 CFR 1910.134.

Respectfully,



R. M. Krich  
Vice President – Regulatory Services

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J. Craig

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Innsbrook Technical Center  
5000 Dominion Boulevard  
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63FR 40141  
July 27, 1998



VIRGINIA POWER

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September 30, 1998

Rules and Directives Branch  
Division of Administrative Services  
Office of Administration  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20055-0001

GL98-027

Gentlemen:

**DRAFT REGULATORY GUIDE DG-8022; ACCEPTABLE  
PROGRAMS FOR RESPIRATORY PROTECTION**

Virginia Power has reviewed the subject Draft Regulatory Guide and offers the comments in the attached table.

Thank you for your consideration of our comments. If you need further information, please contact Gwen Newman at (804) 273-4255, [Gwen\\_Newman@vapower.com](mailto:Gwen_Newman@vapower.com), or Tom Szymanski at (804) 273-3065, [Tom\\_Szymanski@vapower.com](mailto:Tom_Szymanski@vapower.com).

Respectfully,

A handwritten signature in black ink, appearing to read 'J. McCarthy'.

For:

James H. McCarthy, Manager  
Nuclear Licensing & Operations Support

Attachment

cc: Mr. Ralph Andersen  
Nuclear Energy Institute  
1776 I Street, N. W.  
Suite 400  
Washington, D. C. 20006-3708

**VIRGINIA POWER COMMENTS**  
**DRAFT REGULATORY GUIDE DG-8022;**  
**ACCEPTABLE PROGRAMS FOR RESPIRATORY PROTECTION**  
**SEPTEMBER 30, 1998**

Reference	Proposed	Comment
B <i>Discussion</i>	The first paragraph on page 3, second sentence, the fourth line, "potection"	"protection"
Section 2.2 <i>Findings of ALARA Evaluation</i>	The sixth bullet on page 7, "condentrations"	"concentrations"
Section 2.2 <i>Findings of ALARA Evaluation</i>	The last paragraph at the bottom of page 7 reads, "For ALARA evaluations, a respirator-induced worker inefficiency factor of up to 15% may be used without further evaluation."	The regulatory guide should be consistent with EPRI report TR-105350, "Effects of Respirators on Worker Efficiency", which discusses the use of a 25% factor.
Section 3.2 <i>Written Procedures</i>	The second section has "Written procedures should be in place for: <ul style="list-style-type: none"> <li>• Performing and documenting the required medical evaluation</li> <li>• Supervision of the program....</li> <li>• Training and minimum qualifications....</li> <li>• Maintaining TEDE ALARA.."</li> </ul>	This could be interpreted as requiring "in hand" procedures for the performance of the above. These are programmatic guidelines and may be better defined by requiring a "Written Program".
Section 3.2 <i>Written Procedures</i>	The third section discusses written procedures for the application of respirators.	These applications should be included in the TEDE ALARA evaluation process.
Section 3.3 <i>Application of Assigned Protection Factors</i>	"If the APF of a respirator is greater..."	This section has the potential to allow a significant dose to not be recorded. If a worker were exposed to a concentration that is slightly under the APF for a long duration their internal exposure would be significant.
Section 4.3 <i>Inventory, Inspection, and Storage</i>	The third paragraph, "Emergency respiratory protection equipment..." would require emergency SCBA to be donned and tested.	This would be the same as taking SCBA out of service since they must be cleaned after donning. There are other means of testing/inspecting that would not require the mask to be taken out of service.

**VIRGINIA POWER COMMENTS**  
**DRAFT REGULATORY GUIDE DG-8022;**  
**ACCEPTABLE PROGRAMS FOR RESPIRATORY PROTECTION**  
SEPTEMBER 30, 1998

Reference	Proposed	Comment
Section 5.3 Fit Testing	Page 21, third paragraph, "Each person being fit tested should have already been trained in how to properly don and fit-check face-sealing respirators. Therefore, during the test, no person should assist or coach fit test subjects who are not obtaining a satisfactory facepiece seal".	The purpose of the fit test is to determine if a person's physical characteristics allow for a seal and to determine the proper size and/or design of facepiece. We feel that it is inappropriate for the person conducting the test not to advise the subject on proper size.
Section 5.3 Fit Testing	Frequency of fit testing	The benefit of three year fit testing may not be realized since annual testing is required for industrial respiratory protection. Common practice is to use one fit test for both programs. This change would require two separate fit test programs or remaining with the one year frequency.
6.1 Standby Rescue Persons	"Section 20.1703(f) would require that, when standby rescue persons covers workers..."	The requirement for direct communication between the standby person and worker may force the standby person to remain in a high dose rate area since respiratory devices make communications difficult and wire/wireless means of communication may not be practicable. The radiological conditions requiring the worker to wear these levels of protective equipment may preclude the standby person from being in direct communication and immediately available without being so dressed themselves. This, in turn, may not lend itself to the concept of keeping total TEDE ALARA.

**VIRGINIA POWER COMMENTS**  
**DRAFT REGULATORY GUIDE DG-8022;**  
**ACCEPTABLE PROGRAMS FOR RESPIRATORY PROTECTION**  
**SEPTEMBER 30, 1998**

Reference	Proposed	Comment
Section 6.2 Face-to-Facepiece Seal Integrity	"the worker must be clean-shaven"... "A respirator wearer should not be required to shave more than once during each 12-hour period"	These statements may create problems since some workers may have to shave more than once per 12 hours in order to be clean shaven. We feel that the statement, "a respirator wearer should not be required to shave more than once during each 12-hour period" should be deleted to prevent confusion.
Section 7.3, Paragraph 9.1.4	"Paragraph 9.1.4. states, "A respirator fit test shall be carried out for each wearer of a tight-fitting respirator at least once every 12 months."	Once every twelve months should be the consistent standard that is used throughout the regulatory guide.

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RC-98-0176

63FR 40141  
July 27, 1998



September 28, 1998  
RC-98-0176

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Mr. David L. Meyer  
Chief, Rules Review and Directives Branch  
Mail Stop T-6 D69  
Office of Administration  
United States Nuclear Regulatory Commission  
Washington, DC 20555-0001

Stephen A. Byrne  
General Manager  
Nuclear Plant Operations

Dear Mr. Meyer:

Subject: VIRGIL C. SUMMER NUCLEAR STATION  
DOCKET NO. 50/395  
OPERATING LICENSE NO. NPF-12  
DRAFT REGULATORY GUIDE, DG-8022, COMMENTS

South Carolina Electric and Gas submits the attached comments on the Draft Regulatory Guide, DG-8022, "Acceptable Programs For Respiratory Protection."

SCE&G appreciates the opportunity to provide comment on this proposal. If you have any questions regarding this matter, please contact Mr. Ricky Myers at 803-345-4384.

South Carolina Electric & Gas Co  
Virgil C. Summer Nuclear Station  
P. O. Box 88  
Jenkinsville, South Carolina  
29065

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Very truly yours,

Stephen A. Byrne

RAM/SAB/dr  
Attachment

c: J. L. Skolds  
W. F. Conway  
R. R. Mahan (w/o attachments)  
R. J. White  
L. M. Padovan

NRC Resident Inspector  
L. A. Blue  
RTS (REG 980007)  
File (811.05)  
DMS (RC-98-0176)

**Comments**  
**Draft Reg. Guide, DG-8022**

**Section 4.3, Inventory, Inspection, and Storage, 3rd paragraph:**

Specifies that Emergency SBCAs should be donned and operability tested at least quarterly.

It is not necessary to don an SCBA to determine its operability. This interpretation would consume excessive resources in both time to perform the test as well as waste air with the additional burden of refilling the bottles. Please strike the words "donned and" from the sentence "Emergency respiratory protection equipment (SCBA) should be donned and operationally tested frequently (at least quarterly).

**Section 5.3, Fit Testing, 6th paragraph:**

The reference to 29 CFR 1910.1001 on asbestos is no longer applicable in reference to OSHA's latest revision to this regulation. It would be better to include a caution concerning the differences between 10 CFR 20 and other Federal regulations as part of paragraph 3 of this same section, when discussing the exception to the recommendations of ANSI Z88.2-1992.

**Section 3.5, Supervisory Requirements, and Section 5.3, Fit Testing:**

The requirements in these sections differ from the requirements of other Federal regulations, particularly 29 CFR 1910. This can place an additional administrative burden on licensees to track respirator qualification through differing programs to meet the conflicting Federal regulations. There is a resultant increase in the potential for misapplication of the inconsistent regulations to particular situations requiring the use of respiratory protection. In most circumstances adherence to either the non-radiological or radiological respiratory protection regulations would provide adequate safeguards to individuals. There is no justification for the additional administrative burden to track qualifications in compliance to differing sets of regulations.

While it is encouraging that the NRC has attempted to be less restrictive in its regulation, it is suggested that in the future, differing Federal regulators attempt to work together to provide consistent regulations, especially in areas where jurisdiction can easily overlap.



**IEM**

Integrated Environmental Management, Inc.

*DS09  
J. Craig*

*63FR 40141  
July 27, 1998*

*(7)*

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September 29, 1998

*MD-31-281-01  
RECEIVED  
OCT 1 1998*

U.S. Nuclear Regulatory Commission  
Division of Administrative Services  
Office of Administration  
Washington, D.C. 20555-0001

**Attention:** Rules and Directives Branch

**Subject:** Integrated Environmental Management, Inc.; Maryland Department of the Environment License No. MD-31-281-01; Comments on "Draft Regulatory Guide DG-8022: Acceptable Programs for Respiratory Protection".

**Reference:** Office of Nuclear Regulatory Research (Issued July, 1998)

Integrated Environmental Management, Inc. (IEM) is licensed by the Maryland Department of the Environment (MDE), a U. S. Nuclear Regulatory Commission (USNRC) Agreement State. In addition, IEM is a small business that meets the USNRC's size standards in 10 CFR 2.810. Based on our review of the draft regulatory guide DG-8022 "Acceptable Programs for Respiratory Protection" we have the following comments.

**Section 2.0: ALARA Requirement**

The third paragraph of this section implies that, so long as the licensee has a documented basis for its decision on respiratory protection (including the use of professional judgement), the USNRC will not cite the licensee for its decision to issue or not to issue respiratory protective devices based on ALARA considerations. Please confirm that this conclusion is accurate.

*1/0*

**Section 2.2: Findings of ALARA Evaluation**

A worker inefficiency factor of 15% is specified in this section. However, the rationale and/or reference for this factor is not given. Additional information about this factor should be included in DG-8022, so that licensees may evaluate its applicability.

In addition, the USNRC is asked to confirm that professional judgement may be used as the basis for worker inefficiency factors greater than 15% if the use of respirators is being evaluated based on ALARA considerations.

**Section 2.3: Exceptions to Respirator-ALARA Requirement**

This section mentions that the use of respirators for non-radioactive nuisance dusts can be considered when the total effective dose equivalent (TEDE) is not affected. In a separate comment, DG-8022 also states that compliance with state OSHA regulations is acceptable as it regards the issuance of

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a respirator to any worker requesting this device. Such statements in the regulatory guide, if followed, will trigger the programmatic requirements of §20.1703. This is because under the proposed USNRC regulations, the act of providing a respirator to an employee, regardless of whether it serves to control exposures from intakes of radioactive material or not, demands that the licensee establish a respiratory protection program. If the licensee does not have an approved respiratory protection program incorporated into its license, it subjects the licensee to enforcement action unless a costly program is implemented. Additional clarification on this issue, and perhaps an exception for those circumstances when "credit" is not taken for respiratory protection usage would be helpful.

### **Section 3.1: Applicability**

The first paragraph of this section states, "Unless a licensee can clearly show otherwise, any use of respirators is considered to be for the purpose of limiting intake of radioactive material." Since Section 2.3 recognizes that licensees must provide respirators to workers upon request, the statement in Section 3.1 will inevitably result in licensees requiring such workers to sign a statement that they are requesting a respirator. If an employee, for any reason, refuses to sign such a statement, the licensee will be faced with either noncompliance with OSHA regulations or the need to establish a fully-compliant respiratory protection program. This statement should be deleted.

### **Section 3.4: Surveys**

This section reiterates the proposed requirements of §20.1703(c)(1) and (c)(2), requiring the implementation of a survey program which includes bioassay measurements. Under most exposure circumstances, IEM does not take exception to this recommendation. However, it is well known that certain chemical and physical forms of the heavy elements (i.e., W- and Y-class forms of thorium, and Y-class forms of uranium and some transuranics) are relatively insoluble in body fluids. In addition, conventional bioassay methods (i.e., whole body and organ counting, urine bioassay, and fecal bioassay) are not sensitive enough for routine exposure monitoring for these elements. Under these circumstances, the only option open to a licensee is to sample the air in the breathing zone of the worker, and then make assumptions about intake rates, patterns, and metabolism in order to estimate the worker's dose of record. Bioassay measurements, in the conventional sense, are simply impossible.

The requirement to evaluate actual intakes places an undue burden on licensees who work with the aforementioned materials. They would be either unable to comply with the regulation, or forced to implement a bioassay program that, because of inadequate sensitivity, is unable to provide any useful data. It may, in fact, place the licensee in a perpetual state of noncompliance since minimum detectable activities for industry-standard analyses are typically larger than the annual limit on intake (ALI).

### **Section 3.6: Inappropriate Use of Respirators**

A statement should be added to this section that provides an exemption when an employee requests a respirator.

### **Section 4.5: Control and Issuance**

See comment on Section 3.1. An exemption should be specifically listed for those instances when an employee requests a respirator.

### **Section 5.3: Fit Testing**

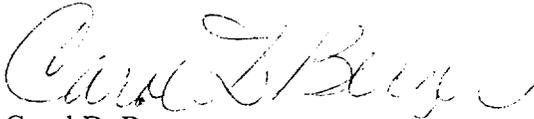
This section states that "if irritant smoke is used as the challenge aerosol during qualitative fit testing, a containment chamber around the head and torso of the subject may be used to protect the person administering the test. However, earlier in this section, the protocols found in Sections B1 through B5 of Appendix A to 20 CFR 1910.134, "Respiratory Protection" are given as recommended methods for quantitative and qualitative fit test., even though section B5(3) states that "No form of test enclosure or hood for the test subject shall be used".

### **Section 5.4: Fit Checks (User Seal Checks)**

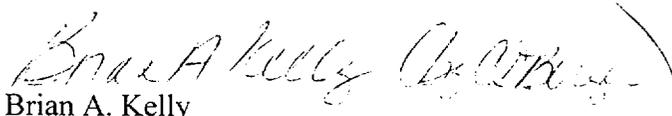
These sections of the draft regulatory guide cite one of the requirements of §20.1703(c)(3), i.e., that a fit check be performed for leakage prior to each use. The results of such tests are typically not documented, and there is no quantitative means of determining whether the respirator "passed the test" or not. Therefore, licensees are typically not in a position to demonstrate compliance with this requirement.

Thank you for the opportunity to submit these comments and recommendations for your review. If you have any questions, please contact Mr. Alex J. Boerner, C.H.P. of IEM's Knoxville, Tennessee office. Mr. Boerner can be reached at (423) 531-9140.

Sincerely,



Carol D. Berger  
President



Brian A. Kelly  
Chief Operations Officer

cc: A. J. Boerner, C.H.P.  
R.A. Duff, R.R.P.T.  
Douglas McAbee - Maryland Department of the Environment  
Charles Hardin - Conference of Radiation Control Program Directors, Inc.



THE SAFETY EQUIPMENT ASSOCIATION

J. GRAY

635K 70171  
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October 7, 1998

Rules and Directives Branch  
Division of Administrative Service  
Office of Administration  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

RE: Comments of ISEA, The Safety Equipment Association regarding NRC Draft Regulatory Guide DG-8022.

Dear Secretary:

ISEA represents the leading manufacturers of safety and health equipment. ISEA members manufacture more than 95% of all NIOSH certified respirators. We offer the following comments to the NRC Draft Regulatory Guide DG-8022, which is a proposed revision to Regulatory Guide 8.15, *Acceptable Programs for Respiratory Protection*.

#### Discussion

The NRC states in the Summary of Regulatory Requirements under Section B., Discussion, that workers endure additional stresses, have their vision obstructed, movements hindered, communication ability impaired and in general are at increased risk of injury, all attributed to wearing respiratory protection. ISEA objects to the general negative tone of these statements and does not believe that they are correct.

Today's state-of-the-art respirators pose very little physiological stress on the wearer in the form of significantly increased breathing resistance. Any psychological stress from wearing any personal protective equipment can be significantly reduced with proper worker training and education as required by section 3.2 of this document. In addition, there are a wide range of sizes and styles of respirators available for workers performing all types of tasks. When selected and fitted properly, respirators pose minimal obstruction to vision, do not hinder movement and will not present additional risk of injury by virtue of their presence.

#### General

Certain terminologies should be changed. These are as follows:

1. User Seal Check should be substituted for Fit Check
2. Filtering Facepiece should be substituted for Disposable in cases where the respirator being referred to has a filter which is an integral part of the respirator
3. Single Use is an obsolete term and should no longer be used (see other comments under 4.7)

## ISEA Comments to NRC Guide DG-8022

### Section 3.6

In some instances, it is not feasible to engineer out exposures related to routine or repetitive tasks. Respiratory protection is an effective, reliable means of exposure control where engineering controls are not a reasonable option.

### Section 4.6 and 4.8

NRC requires "at least 99 percent efficient". NRC offers no justification as to why 95% efficiency filters should not be used. ISEA believes 95% efficiency filtering respirators should be allowed and given an APF of 10, as this what is allowed by ANSI for any half mask respirator with a minimum filter efficiency of 95%. We see no reason to only allow a minimum of 99% efficiency since if a wearer passes a fit test with a 95% efficiency respirator they must achieve a fit factor of at least 100, and therefore can assume to have a protection factor of at least 10.

### Section 4.7

ISEA believes that a half face piece disposable respirators without seal enhancing elastomeric components and are not equipped with two or more adjustable suspension straps should not be categorically discounted and effectively given an APF of 1. These respirators are half masks and provide the same level of protection as an elastomeric half face piece respirator with the required features.

If a respirator meets all requirements including NIOSH certification and it has been determined that a particular device fits on an individual (through fit testing) then that device should be allowed for use and given the appropriate credit for protection. general statements as found in the preamble that "NRC believes that without these components it is difficult to maintain a seal in the workplace" should not be made.

The efficacy of a particular device on a specific individual can only be determined on a case by case basis through a comprehensive respiratory protection program. Those elements which include training and fit testing will determine whether or not a particular device is appropriate for an individual. We do note that the NRC does give credit for those respirators that are fit tested to an APF level of 100 when the licensee performs the appropriate fit test. We do not understand why the NRC differentiates between these filtering facepieces and other half mask respirators when the result is the same. We believe that these respirators should not be treated in a different manner from other half face piece respirators.

### Section 5.3

ISEA believes that the frequency of fit testing should be at least once per year. Although, we understand that in the case of protection from radioactive substances there are accurate means to determine exposure of an individual and therefore respirator fit is actually determined through a very indirect method, we maintain that the fit test must still be evaluated annually. Indirect means of determining fit and/or exposure should not take the place of fit testing. Taking such an approach diminishes the importance of respiratory protection in individuals and thereby engenders little confidence in their use.

Although we agree that the use of respiratory protection should only be used as a secondary means of protection, and that engineering and administrative controls should be the primary means of protection, when respirators are used they should be used with the intent of them providing the maximum level of protection afforded to them. By not performing yearly fit tests one cannot

## ISEA Comments to NRC Guide DG-8022

ensure that they are in fact providing the maximum level of protection they are intended to provide. An individual's condition can change substantially in a year or less and could dramatically effect the efficacy of a respirator. Such conditions are weight change, use of dentures, use of corrective lenses, psychological conditions, etc. A supervisor or even the individual wearer either may not be aware or consider that such changes may effect the fit and ultimately the efficacy of the respirator.

In addition, fit testing on an annual basis provides the wearer an opportunity to be retrained and reminded of the proper use of respiratory protection and also allows management to ensure that the respirator is being used properly. We therefore recommend that fit testing be conducted on an annual basis.

In the last paragraph of 5.3 it is recommended that steps should be taken to protect the person administering the test from repeated exposures to the irritant smoke. It goes on to recommend the use of a containment chamber around the head and torso of the fit test subject to contain the smoke. ISEA strongly urges NRC not recommend the use of a hood around the test subject when irritant smoke is used. This can create an extreme danger to the test subject. Studies conducted have shown that the Hydrogen chloride levels ( the component of the irritant smoke) could reach IDLH levels if a hood is used. It would be more appropriate for the test administrator to use gas proof goggles and a respirator to avoid significant exposure to the smoke.

Also the in the second paragraph where it reads " The factor of 10 greater than..." should be changed to "The factor of 10 times greater than"

### Section 6.5

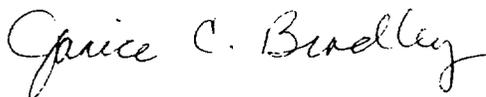
The NRC calls out the use of Grade D air as defined in ANSI/CGA G-7.1-1989. ISEA requests that the most current standard of ANSI/CGA be used This is ANSI-CGA G-7.1, 1997

### Section 7.2

ISEA believes that quarter chin masks should not be categorically eliminated for use by the NRC. If a respirator meets all requirements including NIOSH certification and it has been determined that a particular device fits on an individual (through fit testing) then that device should be permitted for use.

ISEA appreciates the opportunity to comment on the proposed changes to the draft regulatory guide DG-8022. Please call me if I can provide additional assistance.

Sincerely,



Janice C. Bradley, CSP  
Technical Director