

94-065



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June 20, 1994

Dear Sirs:

**RE: PUBLIC COMMENT ON THE NOTICE OF PROPOSED RULEMAKING
FOR 42 CFR PART 84 - RESPIRATORY PROTECTIVE DEVICES**

INTRODUCTION

On behalf of Brookdale International Systems Inc. ("Brookdale") I wish to accept your invitation to submit comments on the above-referenced Notice of Proposed Rulemaking (Federal Register Volume 59, No. 99, May 24, 1994) with regard to the scope and applicability of the proposed modifications.

The following comments postulate the need for the scope of 42 CFR 84 to be expanded to provide test and performance criteria for respiratory protective escape devices ("RPEDs") that provide escaping civilians (workers and members of the general public) with personal respiratory protection when they are exposed to products of combustion. This hazard is both major and under-recognized in North American. It appears not to have been contemplated by 42 CFR 84.

DEATHS AND INJURIES DUE TO SMOKE INHALATION

Well-established summary statistics present a compelling case that smoke is by far the most important agent causing injury and death from fire in North America: over 75% of the 5,000 deaths and 60,000 serious injuries that result annually from North America's unwanted fires are caused, in whole or in part, by smoke inhalation; these smoke inhalation-related deaths and injuries are now driving, in both the U.S. and Canada, our national fire-related human loss records, which are among the worst in the industrialized world.

The fire smoke problem is just as severe, but not as frequent, in the context of occupational safety as it is for the general public housed in residential occupancies. Approximately 1,000 North Americans in occupational settings die annually from smoke inhalation. A further 12,000 suffer serious respiratory injuries. In February 1993 the World Trade Center bombing in New York injured 1,000 unprotected office workers. Most of their injuries were due to toxic smoke inhalation. While this incident was spectacular in its scope, similiar incidents produce similiar results on a smaller scale every day in an occupational setting somewhere in North America.

JUN 27 1994

During the last 20 years, a period in which **burn-related** death and injury rates have fallen dramatically, **smoke inhalation-related** death and injury rates have risen significantly. Brookdale promulgates the view that the prime cause of this disturbing trend is civilians' lack of personal respiratory protection during the escape process that begins with the fire alarm sounding in the workplace or home and ends with assembly a safe distance from the fire ground. It is during this crucial period that we experience the vast majority of our human losses.

EXPAND THE SCOPE OF 42 CFR 84

Brookdale believes that it is incumbent upon NIOSH in its standards setting role, and of OSHA through its enforcement mandate, to deal with the occupational hazards of fire. To do so NIOSH must broaden the scope of 42 CFR 84 to include the structural fire environment and civilians' need for personal respiratory protection to escape therefrom. This expansion in the scope of 42 CFR 84 is particularly imperative for high-risk groups including disabled people in the workplace and children and elderly people in residential occupancies.

SCBAs ARE NOT APPROPRIATE DEVICES FOR THE CONTEMPLATED NEED

To date there has been no work performed within NIOSH to develop test and performance standards for **appropriate** RPEDs (due to their weight, bulk, training and maintenance requirements, SCBAs are not considered "appropriate RPEDs" for the contemplated need) designed to provide short term emergency protection against the effects of fire smoke resulting from unwanted fire in the workplace and the home. There is no overriding technical reason why NIOSH cannot now address this oversight, although the nature of existing regulations, especially those governing air-purifying particulate (DFM) and escape-only types of respirators is such that up to now a rational technical design basis has not been possible.

MYCOBACTERIUM TUBERCULOSIS ... WHY NOT SMOKE PARTICULATES?

The proposed modifications are expected to be of particular value in addressing the significant potential health hazard posed by Mycobacterium tuberculosis-bearing aerosols in occupancies such as health care facilities. Respiratory protective performance criteria established for this purpose by the Center for Disease Control are directly addressed by the proposed modifications.

Brookdale believes that relevant performance criteria for protection against fire smoke particulates can be developed and structured in a similiar manner and will be directly addressed by these same modifications.

THE RESPONSIBILITY OF THE CENTER FOR DISEASE CONTROL

The existing NIOSH mandate for worker respiratory protection, up until now under the jurisdiction of the Department of Labor, is admittedly a poor fit for regulating hazards confronted by the general public. However, Brookdale believes that the responsibility for developing standards for testing and certification of RPEDs for general public use in the U.S. properly falls within the jurisdiction of the Center for Disease Control and Prevention of the U.S. Public Health Service.

TEST AND PERFORMANCE STANDARD DEVELOPMENT CHALLENGES

Brookdale acknowledges that certain anomalies, in the basic descriptive language of the regulations, inhibit the development of appropriate test and performance standards in this important area.

Specifically, the current and proposed descriptive bases for all certifiable particulate air-purifying filters include requirements for protection against atmospheres that contain adequate oxygen to support life and are contaminated with particulates not IDLH (proposed Section 84.170). The former requirement is consistent with the essentially uncompromised oxygen content of fire smoke atmospheres encountered at any point along a viable escape path. However, the latter requirement is breached by many fire smoke atmospheres which may be characterized by high concentrations of particulate matter that are extremely IDLH. This situation would not be dissimilar to that potentially found in health care facilities where dangerously high levels of Mycobacterium tuberculosis can be found. In fact, it may be argued that no measurable level of Mycobacterium tuberculosis should be considered below IDLH.

Recent large scale epidemiological studies on the health effects of particulate air pollution demonstrate clearly that significant negative health effects accrue from surprisingly low particulate concentrations and that these effects increase predictably with pollutant concentration over several orders of magnitude. Even exposure levels previously considered safe are capable of causing low-level, chronic ill effects which can generate irreversible impairment of respiratory function. Unlike gases and vapors whose physiological and toxicological effects are typically more readily quantified and understood, the concept of IDLH is arguably not appropriate for a great many if not all particulate irritants.

The long term negative effects that afflict some people after relatively brief exposures to certain substances (such as airborne asbestos) are cases in point. No reasonable IDLH values can be set for such exposures. Should this observation lead one to argue, therefore, that respiratory protective standards should not be set or that performance criteria cannot be properly established for air-purifying type respiratory protective devices? If so, then it may be argued further that there is no place for RPEDs in any regulatory context.

Brookdale does not subscribe to this view because it does not recognize the improved capability of current air-purifying filter technology. Nor does this view acknowledge the urgent and demonstrated need for simple and effective RPEDs as aids to escape from fire smoke and many related acute atmospheric threats.

Short term occupational exposure to smoke is, in fact, a scenario that is explicitly contemplated in the proposed section 84.170. In many real-world situations, however, a contradiction arises between the use requirement not to exceed IDLH concentrations and the known danger of short duration exposures coupled with high concentrations of particulates. Yet, the utility of air-purifying respiratory protective devices for short-term use against acute exposures (not for use in firefighting) has been well-documented. There is a need, where justified, to remove this unnecessary restriction to non-IDLH atmospheres and to develop suitable performance and test standards for RPEDs intended for use as emergency escape aids against fire smoke and related hazards.

CONCLUSION

There is an obvious need for reliable, well-engineered and user-friendly RPEDs to facilitate peoples' rapid escape from fire smoke. A significant portion of the use potential for this type of device would fall necessarily within the occupational context, but as there is typically little distinction between gross fire hazards in or outside the workplace, there is little justification for identifying fire hazards in occupational settings as generically different from, or in some way more deserving of regulatory attention than, fire hazards in residential occupancies.

The transfer of nominal regulatory responsibility for Respiratory Protective Devices from the Department of Labor (Title 30) to the Public Health Service (Title 42) establishes the appropriate format and context for general public health regulatory measures to be brought to bear now to address this hitherto neglected area of concern which has caused unacceptably high human losses in North America.

To improve North America's human fire loss record, the fire survival process must focus on its root cause: smoke inhalation. To evoke this focus Brookdale urges NIOSH to expand the present scope of proposed Rulemaking for 42 CFR Part 84 to contemplate devices whose purpose is to provide workers and the general public with personal respiratory protection while they escape from the fireground. This re-thinking is imperative for certain high-risk groups including children, the elderly and disabled North Americans.

RPEDs will not compete with, or be a substitute for, the development and maintenance of code compliant buildings. They will be used in combination with established and cost-effective fire protection measures such as detection, suppression and fire resistive construction.

RPEDs offer a cost-effective mitigating approach to the problem of human losses due to smoke inhalation. They represent a new line of attack whose suitability-for-use should be regulated by those bodies that are mandated to protect civilians in occupational settings.

Yours sincerely,
BROOKDALE INTERNATIONAL SYSTEMS INC.



per:

L. John Swann - President & CEO