



**DEPARTMENT OF THE ARMY**  
**OFFICE OF THE SURGEON GENERAL**  
5109 LEESBURG PIKE  
FALLS CHURCH, VA 22041-3258

REPLY TO  
ATTENTION OF

DASG-PPM-NC

15 AUG 2002

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Beryllium Surveillance and Medical Monitoring Policy

1. References:

- a. 10 CFR, Part 850, Chronic Beryllium Disease Prevention Program, 8 Dec 99.
- b. OSHA Hazard Information Bulletin, Preventing Adverse Health Effects from Exposure to Beryllium on the Job, 2 Sep 99.
- c. DODI 6055.5-M, Industrial Hygiene and Occupational Health, 10 Jan 89.
- d. Duebner, D. C., Goodman, M. and Iannuzzi, J. "Variability, predictive value, and uses of the beryllium blood lymphocyte proliferation test (BPLT): Preliminary analysis of the ongoing workforce survey." Applied Occupational and Environmental Hygiene, Volume 16(5) 2001.
- e. Kolanz, Marc. Introduction to Beryllium: Uses, Regulatory History, and Disease. Applied Occupational and Environmental Hygiene, Volume 16(5) 2001.
- f. Memorandum, AMCSG-I, 7 May 02, subject: Work Place Exposure to Beryllium (Encl).

2. Policy.

a. Army policy reflects the current regulatory requirements, subject to change. The lower threshold limit value (TLV) of  $0.2 \text{ ug/m}^3$  will be adopted by the Army if published as final by the American Conference of Governmental Industrial Hygienists (ACGIH). The current permissible exposure limit (PEL) is  $2.0 \text{ ug/m}^3$ . Periodic medical surveillance consists of history and physical with focus on the pulmonary system. Complaints and abnormalities relating to the pulmonary system should be evaluated based on medical judgment. The Beryllium Lymphocyte Proliferation Test (BeLPT) is not required, nor is it recommended for asymptomatic workers. Symptomatic workers with a known exposure to beryllium may be evaluated with a BeLPT, but should be counseled that two positive tests are typically required to identify sensitization. Biopsy remains the Army standard for diagnosis of chronic beryllium disease (CBD). Symptomatic workers found to be sensitized to beryllium should be evaluated by a pulmonologist.

DASG-PPM-NC

SUBJECT: Beryllium Surveillance and Medical Monitoring Policy

b. In the interim period while the occupational exposure limit is being evaluated by the ACGIH, 0.2 micrograms per cubic meter is a prudent action level. Engineering controls, work practices, housekeeping controls and training must be instituted in settings where beryllium is used. Use appropriate personal protective equipment (PPE) where elimination is not possible.

3. Background.

a. The Occupational Safety and Health Administration (OSHA) and the ACGIH have established regulations, standards and recommendations for beryllium and its compounds. The current PEL of 2 ug/m<sup>3</sup> was adopted by ACGIH in 1959 and adopted by OSHA in 1972. Following that, it was noted that acute beryllium disease was essentially nonexistent, and that the incidence of CBD appeared to be declining. In 1998, ACGIH published notice of intent to decrease the TLV to 0.2 ug/m<sup>3</sup>. This was based on epidemiological evidence that CBD had been detected in workers exposed to workplace concentrations below 2.0 ug/m<sup>3</sup>.

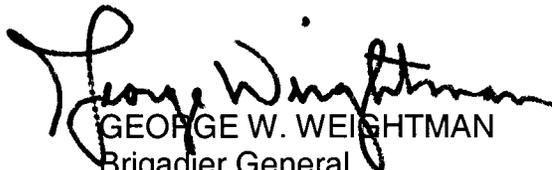
b. Beryllium Lymphocyte Proliferation Test (BeLPT). This test measures sensitization to beryllium in peripheral lymphocytes. Prior to 1989, CBD was diagnosed after an evaluation based on signs and symptoms of disease in symptomatic persons. With the advent of the BeLPT, available in very limited laboratories in the U.S., diagnosis of CBD can be made based on sensitization and a biopsy in asymptomatic individuals. The BeLPT, unfortunately, suffers from highly variable estimates of sensitivity and specificity because biopsies are not performed on those with normal results. Estimates of positive predictive value range from 11% to 100%, although the criteria for a positive test can also be variable.

4. This change is effective immediately and will be reflected in the next updates of the affected regulations.

5. The point of contact for this memorandum is COL Paul D. Smith, Occupational Medicine Staff Officer, Proponency Office for Preventive Medicine, DSN 761-0022 or Commercial (703) 681-0022.

FOR THE SURGEON GENERAL:

Encl  
as

  
GEORGE W. WEIGHTMAN  
Brigadier General  
Assistant Surgeon General  
for Force Projection

DASG-PPM-NC

SUBJECT: Beryllium Surveillance and Medical Monitoring Policy

DISTRIBUTION:

Commander, Center for Health Promotion and Preventive Medicine, 5158 Blackhawk Road, Aberdeen Proving Ground, MD 21010-5403

Commander, European Regional Medical Command, CMR 442, APO AE 09042

Commander, Great Plains Regional Medical Command, 2410 Stanley Road, Fort Sam Houston, TX 78234-6200

Commander, North Atlantic Regional Medical Command, 6900 Georgia Avenue, NW, Washington, DC 20307-5001

Commander, Pacific Regional Medical Command, 1 Jarrett White Road, Honolulu, HI 96859-5000

Commander, Southeast Regional Medical Command, Bldg 38701, Fort Gordon, GA 30903-5650

Commander, Western Regional Medical Command, Bldg 9045, Jackson Avenue, Tacoma, WA 93431-1100

Commander, U.S. Army Materiel Command, ATTN: AMCPE-SG, 5001 Eisenhower Avenue, Alexandria, VA 22333-0001

Commander, U.S. Army Test and Evaluation Command, ATTN: Surgeon, Park Center IV, 4501 Ford Avenue, Alexandria, VA 22333-0001

Commander, U.S. Army Forces Command, ATTN: Surgeon, 1777 Hardee Avenue, SW, Fort McPherson, GA 30330-6000

Commander, U.S. Army Training and Doctrine Command, ATTN: Surgeon, 7 Fenwick Road, Fort Monroe, VA 23651-5000

CF:

Deputy Assistant Secretary of the Army, ATTN: ESOH, 600 Army Pentagon, Washington, DC 20310-0600

Assistant Secretary of the Army, ATTN: M&RA, 111 Army Pentagon, Washington, DC 20310-0111



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
HEADQUARTERS, U.S. ARMY MATERIEL COMMAND  
5001 EISENHOWER AVENUE, ALEXANDRIA, VA 22333-0001

AMCSG-I (40-5e)

7 May 02

MEMORANDUM FOR The Surgeon General (DASG-PPM-NC), 5109 Leesburg Pike,  
Falls Church, VA 22041-3258

SUBJECT: Work Place Exposure to Beryllium

1. References:

a. Manual, Department of Energy (DOE), undated, subject: Defense Programs Beryllium Good Practice Guide, <<http://tis-nt.eh.doe.gov/be/defense.html>>.

b. Newspaper Article, Sam Roe (staff reporter) Chicago Tribune, March 19, 2002, subject: Beryllium Tests Urged For Military Workers (Enclosure)

2. Within the last few years, it has become apparent to DOE that some contractor employees who have worked (or are currently working) with and around beryllium have developed chronic beryllium disease (CBD), an occupational granulomatous lung disorder. Beginning in 1984, with the identification of a CBD case in a DOE contractor worker, there was increased scrutiny of both industrial hygiene practices and individuals in this workforce. Many additional cases of beryllium-specific sensitization and/or CBD have been identified. Thus, a disease previously thought to be largely eliminated by the adoption of permissible exposure standards 45 years ago is still a health risk in certain workforces. In response to this finding DOE is conducting large-scale screening programs, which use the lymphocyte proliferation test (LPT), combined with more definitive medical examinations (Reference 1.a). Recently the Chicago Tribune published articles critical of DOD for not conducting similar testing (Reference 1.b).

3. The Occupational Safety and Health Administration (OSHA), the National Institute for Occupational Safety and Health (NIOSH), and the American Conference of Governmental Industrial Hygienists (ACGIH) have established regulations, standards, and recommendations for beryllium and its compounds. In conformity with the limits established by OSHA and adopted by DOE and the Department of Defense (DOD)/Department of the Army (DA), the 8-Hour Time Weighted Average (TWA) of 2.0 micrograms of beryllium per cubic meter ( $\mu\text{g}/\text{m}^3$ ) of air (for an 8-hour time-weighted average) is the standard for DOE and DOD/DA facilities. (See Enclosure 2 for a more complete discussion of occupational limits.) Brush Wellman (a DOE contractor) uses an action level of  $>0.1 \mu\text{g}/\text{m}^3$  to implement medical monitoring and screening. Recent research suggests that the current OSHA permissible exposure limit (PEL) of 2.0 micrograms of beryllium per cubic meter of air (for an 8-hour time-weighted average) is too high to prevent CBD. In response, DOE adopted an Action Level (AL) of 0.2 micrograms per cubic meter.

End

AMCSG-I (40-5e)

SUBJECT: Work Place Exposure to Beryllium

4. The ACGIH has proposed to lower the 8-hour TWA threshold limit value (TLV) for beryllium to 0.2  $\mu\text{g}/\text{m}^3$ . Currently the ACGIH recommends a TLV of 2.0  $\mu\text{g}/\text{m}^3$  for beryllium and its compounds (ACGIH 1996a, 1996b). The ACGIH lists beryllium and its compounds as an A2 suspected human carcinogen (Reference 1.a). If the ACGIH proposal is adopted by its membership, the ACGIH TLV will be the standard used in DA military and civilian workplaces in accordance with AR 40-5, paragraph 5-3.

5. Request that The Surgeon General provide guidance for:

- minimizing worker exposure to beryllium in DA programs and facilities during all phases of beryllium-related work, including the decontamination and decommissioning of facilities. Should the Army implement the DOE AL in its installations, government owned/contractor operated facilities and contractor owned/operated facilities?

- medical monitoring and surveillance of workers exposed (or potentially exposed) to beryllium, based on the best current understanding of beryllium disease and medical diagnostic tests available. Should the Army initiate efforts to test current and former beryllium exposed workers and soldiers for beryllium-specific sensitization using the blood LPT?

6. Point of contact for this memorandum is Mr. John S. Svalina, AMCSG-I, E-mail address: svalinaj@hqamc.army.mil, Phone: DSN 767-0240, Commercial (703) 617-0240.

FOR THE COMMANDER:

Encl:

1. Chicago Tribune Article
2. Occupational Limits



BENJAMIN G. WITHERS  
COL, MC  
ACofS, G1  
Command Surgeon

Chicago Tribune  
March 19, 2002

## **Beryllium Tests Urged For Military Workers**

By Sam Roe, Tribune staff reporter

Several members of Congress are calling for the Department of Defense to test thousands of military personnel who might have been exposed to the highly toxic metal beryllium.

The lawmakers assailed the Pentagon for ignoring federal health guidelines that recommend blood tests for workers exposed to beryllium, a lightweight metal whose dust can cause an often fatal lung disease. Testing in other industries has revealed dozens of illnesses.

"This is a national disgrace the way the Department of Defense has treated these workers," said Rep. Tom Udall, a Democrat from New Mexico.

The Tribune reported this month that beryllium dust has been detected at 73 Army, Air Force, Navy and Marine Corps facilities in 23 states, with some exposure levels twice the federal legal limit.

The Defense Department estimates that 9,513 military and civilian personnel might have been exposed in the last 10 years. The agency said the decision to screen workers rests with doctors at each of its facilities, but military officials said they were unaware of any such testing.

The Pentagon has used beryllium for decades in a variety of applications, including missiles, aircraft brakes and helicopter components. While the Defense Department reports that only one of its workers has developed the disease since the 1940s, studies have long shown that the illness is often misdiagnosed or goes undetected.

Five congressmen contacted by the Tribune said they wanted the Defense Department to take action. They are Udall and Reps. Charlie Gonzalez (D-Texas), Paul Kanjorski (D-Penn.), Ted Strickland (D-Ohio) and Ciro Rodriguez (D-Texas).

The lawmakers also said the Defense Department should compensate employees harmed by beryllium and other substances, similar to the way the Energy Department aids ailing workers who were employed at that agency's facilities.

"This is just about doing the right thing," said Gonzalez, whose district includes former workers at the now-closed Kelly Air Force Base, where beryllium was used.

Strickland said officials who say they support U.S. troops overseas should support the right to basic medical care.

"I don't know how we can wave the flag and speak in glowing terms about fighting the war against terrorism" and not screen the military for a potentially fatal disease, he said.

Other lawmakers said they were concerned about beryllium exposure but wanted to investigate

further.

The Energy Department, which has used beryllium in nuclear weapons, reported few disease cases until it started screening workers in the early 1990s. The agency has since tested 27,800 workers at 18 facilities, finding 729 people with beryllium disease or blood abnormalities linked to the illness.

The screening is recommended by federal agencies, including the Occupational Safety and Health Administration. Early detection is important because it allows treatments that can attempt to limit lung damage.

Beryllium disease has been found in virtually every industry in which workers have been screened. Studies show that about 3 percent of those exposed to beryllium dust develop the illness, sometimes decades after their last exposure.

Kanjorski said it was important to notify all former workers who worked near beryllium.

"There may be a lot of retired people who don't even know that they had the exposure," he said.

**ENCLOSURE 1**

## Occupational Limits

A. The OSHA General Industry Standard, 29 CFR 1910.1000, establishes the following permissible exposure limits for beryllium:

- 8-Hour Time Weighted Average—2 micrograms of beryllium per cubic meter ( $\mu\text{ g/m}^3$ ) of air (for an 8-hour time-weighted average). An employee's exposure to beryllium and its compounds in any 8-hour work shift of a 40-hour work week shall not exceed  $2\ \mu\text{ g/m}^3$ .
- Acceptable Ceiling Concentration— $5\ \mu\text{ g/m}^3$ . An employee's exposure to beryllium and its compounds shall not exceed  $5\ \mu\text{ g/m}^3$  at any time during an 8-hour shift.
- Acceptable Maximum Peak Concentration— $25\ \mu\text{ g/m}^3$ . An employee's exposure to beryllium and its compounds shall not exceed  $25\ \mu\text{ g/m}^3$ , the acceptable maximum peak above the acceptable ceiling concentration, for a maximum duration of 30 minutes. (This limit was set to eliminate acute beryllium disease from exposure to soluble forms of beryllium.)

These exposure limits were adopted from ANSI Z37.29-1970 (ANSI, 1970) and can also be found in 29 CFR 1926 (Construction).

B. NIOSH has recommended that workers should not be exposed to a concentration of beryllium exceeding  $0.5\ \mu\text{ g/m}^3$  at any time (NIOSH 1977).

C. The ACGIH has established an 8-hour time weighted average (TWA) threshold limit value (TLV) of  $2\ \mu\text{ g/m}^3$  for beryllium and its compounds (ACGIH 1996a, 1996b). The ACGIH lists beryllium and its compounds as an A2 suspected human carcinogen. However, the ACGIH has proposed to lower the TLV to  $0.2\ \mu\text{ g/m}^3$  (Reference 1.a).

## ENCLOSURE 2