

TB sign spurs for students

By Tom Lochner  
CONTRA COSTA TIMES

CONCORD - An Ygn... student... as tested positive for tuberculosis, county public health officials... the school will be tested as a precaution.

The Contra C  
tub

Co  
w

Pu  
cul  
mat

Tube  
and

Once

The  
mic  
pr  
re

The

# SARS Kills Hong Canadian Nurses S Health Care Worker; Officials Ignored Warnings

Monday, June 02, 2003

HONG KONG... front-line... hospital... health care worker died of SARS (search) or... ignoring warnings of Toronto's latest outbreak, which

ometers in an island-wide "take-your-temperature" car... the number of daily infections remained in single digits

es and two new cases on its mainland, the lowest figures... on a daily basis in April. The death toll remained at 332 o

770 with more than 8,300 people sickened since the severe... northern China in November. Most of the victims have been in

deaths, including Dr. Cheng Ha-yan, 30, who died Sunday night at... been transferred there after being infected by a patient who initia... d. Cheng had been hospitalized since April 21.

nce of Wales Hospital also died after being infected while caring f... 282 SARS deaths.

## MMR Cross-Contamination Study

Informational Technical Bulletin



## Whose facepiece reduces the risk of cross-contamination?

*MSA's facepiece includes an inhalation check valve to help protect against regulator cross-contamination.*

More and more fire departments are buying individual-issue facepieces for firefighters, mainly to prevent cross-contamination from one user to another.

### **Q: What is meant by cross-contamination?**

**A:** Cross-contamination can occur when an individual is exposed to respiratory, oral, or dermal secretions from another individual through inhalation, ingestion, or touch, which can result in infection.

### **Q: Why is cross-contamination addressed specifically?**

**A:** Suppose that a friend suffers from a cold or flu; would you drink from that person's glass and risk infection? Unlikely; even if you're not concerned about cold and flu contamination, how would you feel about exposure to SARS or tuberculosis? The same holds true for personal respiratory protective gear. You wouldn't use that person's facepiece, but, other than the facepiece, what about sharing the remainder of the SCBA? Depending upon facepiece design, both the facepiece and the second-stage regulator may act as the "drinking glass" and pass infection on to additional users.

### **Q: How does MSA's facepiece help to prevent cross-contamination when sharing the SCBA, other than the facepiece?**

**A:** From the very beginning, MSA's engineers incorporated an inhalation check valve into facepiece design to help prevent exhaled air, bodily fluids, and perspiration from entering the regulator.

### **Q: Why is this facepiece design unique?**

**A:** Most manufacturers do not incorporate an inhalation check valve into their facepiece design. MSA SCBA facepieces are equipped with an inhalation check valve as a standard component, as has been the case for decades.

### **Q: What's the value of this design to users?**

**A:** You have to sanitize **ONLY** the facepiece, not the regulator. No additional decontamination saves time and money and simplifies maintenance.

### **Q: Everyone in our department has individual-issue facepieces, so what's the big deal?**

**A:** Although individual facepieces provide many benefits, they alone do not provide complete protection against cross-contamination. Mask-mounted second-stage regulators that are shared among users can also serve as a source for cross-contamination if the facepieces do not contain inhalation check valves.

### **Q: We thoroughly clean our SCBA units after each use. Isn't that practice sufficient?**

**A:** MSA requires that only the facepiece be disinfected. The second-stage regulator and other components should be cleaned only if noticeably soiled.

### **Q: Well, why shouldn't I believe other manufacturers who contradict MSA's claims regarding the value of inhalation check valves?**

**A:** Don't just take our word for it. Read the results of a third-party study outlined on the following pages.

MSA contracted with Microbac Laboratories to determine the degree of protection provided to users of three typical SCBA facepiece/regulator combinations from pathogenic microorganism cross-contamination. MSA's was the only design that prevented entrance of test agent *Streptococcus lactis* into the second-stage regulator. The two other facepiece designs tested did not have inhalation check valves, the lack of which allowed a significant quantity of contaminant to enter their regulators.

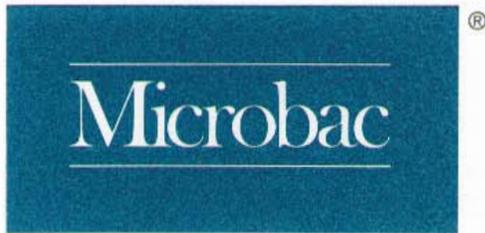
**Conclusion:** MSA offers the only design type effective in helping to prevent cross-contamination of potentially harmful organisms. In addition to the Microbac study, OSHA acknowledged the benefits of inhalation check valves through a clarification letter (issued to MSA on October 28, 1998) stating that designs that do not incorporate an inhalation check valve should be decontaminated between uses.

Questions regarding this study should be directed to **1-877-MSA-FIRE**.

## Cross-Contamination Protection



*The Inhalation check-valve allows air to flow only in one direction when a facepiece is pressurized, helping to protect a shared-use regulator from contamination.*



June 30, 2000

Michael T. Rupert  
Product Line Manager, SCBA  
Mine Safety Appliances Company  
Pittsburgh, PA 15230

Dear Mr. Rupert,

At the request of MSA, Microbac Laboratories Inc. has completed the proposed microbial challenge study of typical facepiece-regulator combinations, for the purpose of enhancing firefighter safety.

#### **Background:**

Microbac Laboratories Inc. is a full service testing laboratory and consulting group, with 24 divisions across the United States. Microbac's Laboratories are certified or accredited by various national and international organizations, including NVLAP, A2LA, USDA, FDA, and NIOSH. In addition we hold over 90 state certification and accreditation's. Microbac also maintains memberships and active participation in many professional organizations such as the American Council for Independent Laboratories (ACIL), American Industrial Hygiene Association (AIHA), Association of Official Analytical Chemists (AOAC), the Institute of Food Technologists (IFT), and the American Chemical Society (ACS).

This study, conducted for MSA, was designed to determine the user protection provided by typical SCBA (self-contained breathing apparatus) facepiece-regulator combinations against cross-contamination by microorganisms. It is understood that users of SCBA are commonly issued individual facepieces, but share the use of second-stage regulators. Typically, the facepiece is easily and effectively cleaned in the field, however, the cleaning of second-stage regulators is more difficult and either is often not done, or ineffective. For this reason, it is of interest to understand the risk of transfer of microorganisms from an individual facepiece to a shared second-stage regulator. At the request of MSA, the company identity of the competitive designs evaluated in this study are not revealed in this report.

#### **Methodology:**

Three typical facepiece-regulator designs were chosen as follows:

- **Brand A**, (facepiece-mounted exhalation valve and no facepiece-mounted inhalation check valve)
- **Brand B**, (regulator-mounted exhalation valve and no facepiece-mounted inhalation check valve)
- **MSA**, (facepiece-mounted exhalation valve with facepiece-mounted inhalation check valve)

The test equipment used was a Biosystems PosiCheck breathing machine. Approximately 7 milliliters of a bacterial culture of *Streptococcus lactis* was standardized to a viable count in a sterile buffered solution and introduced into the facepiece using an in-line aerosol nebulizer. The aerosol nebulizer was located in the flow-channel between the headform and breathing machine to simulate pathogen microorganisms exhaled by a user.

The bacteria *Streptococcus lactis* was chosen for the experiment to eliminate the risks associated with handling pathogenic microorganisms, however the small cell size and morphology of this microorganism is representative of other disease-causing organisms.

All facepiece-regulator combinations were sterilized prior to testing. Swab samples were taken from the internal surfaces of each facepiece and regulator, before and after exposure to the aerosolized *Streptococcus lactis*. Exposure of the facepiece to the microorganism occurred only during the exhalation cycle of the breathing machine. Swab samples were plated following standard microbiological procedures and incubated for 48 hours. Following incubation, the samples were enumerated for growth of the *Streptococcus lactis* culture.

Swab samples taken from the regulators and facepieces before exposure to the culture served to establish sterility of the components. Samples taken from the internal surfaces of the facepieces after exposure to the culture served as the test control to establish the presence of the microorganism in the exhaled air. Lastly, samples taken from the internal surfaces of regulators following organism exposure (breathing machine test), served as the test variable. Any *Streptococcus lactis* detected in the regulator after the breathing machine test would indicate contamination of the regulator.

#### Results:

##### Brand A: (facepiece-mounted exhalation valve and no facepiece-mounted inhalation check valve)

- Regulator Before Sterile
- Facepiece Before Sterile
- Facepiece After 250 colony forming units *S. lactis* detected
- **Regulator After 220 colony forming units *S. lactis* detected**

##### Brand B: (regulator-mounted exhalation valve and no facepiece-mounted inhalation check valve)

- Regulator Before Sterile
- Facepiece Before Sterile
- Facepiece After 460 colony forming units *S. lactis* detected
- **Regulator After 310 colony forming units *S. lactis* detected**

##### MSA: (facepiece-mounted exhalation valve with facepiece-mounted inhalation check valve)

- Regulator Before Sterile
- Facepiece Before Sterile
- Facepiece After 360 colony forming units *S. lactis* detected
- **Regulator After zero colony forming units *S. lactis* detected**

#### Conclusions:

Based on the test results, the MSA facepiece-regulator combination was the only design type that prevented the entry of the *Streptococcus lactis* indicator organisms into the regulator. It is believed the inhalation check-valve is the unique feature of the MSA design that shielded the regulator from the microorganisms. All other facepiece-regulator types tested did not incorporate an inhalation check valve, and permitted the entry of the *Streptococcus lactis* indicator organisms, indicating a potential risk of contamination of regulators, which could result in the cross-contamination of SCBA users.

Thank you for choosing Microbac for your testing and analytical needs.

Sincerely,



Mark A. Matrozza  
Vice President

Page 2 of 2

**Note:** This bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



**MSA Corporate Center**  
1000 Cranberry Woods Drive  
Cranberry Township, PA 16066  
Phone 724-776-8600  
[www.MSAnet.com](http://www.MSAnet.com)

**U.S. Customer Service Center**  
Phone 1-800-MSA-2222  
Fax 1-800-967-0398

**MSA Canada**  
Phone 1-800-672-2222  
Fax 1-800-967-0398

**MSA Mexico**  
Phone 01 800 672 7222  
Fax 52-44 2227 3943

**MSA International**  
Phone 724-776-8626  
Toll-Free 1-800-672-7777  
Fax 724-741-1559

**Offices and representatives worldwide**  
For further information:

