WHY SHOULD RESPIRATOR USERS BE FIT TESTED?

APPLICATION NOTE RFT-003

Fit testing of respirator users is mandated in countries such as the United Kingdom, Canada and the United States; however most industrialized nations have no such requirement. Given the absence of a fit testing regulation, why would an employer want to implement a respirator fit testing program? The answer is simple: To help workers stay healthy; to help workers maintain productivity; to reduce healthcare costs; and to limit employer liability.

> "98 percent of fit tested workers exceeded the minimum protection level compared to only 55 percent of non-fit tested workers."

Supporting Data

Research has shown that fit tested respirator wearers achieve higher protection levels from their respirator. A number of workplace protection factor studies have been published around the world over the last 25 years.

A WPF (Workplace Protection Factor) study is where researchers directly measure respirator performance in the actual workplace by collecting samples inside and outside a worker's respirator during work activities. When a worker has a WPF of 100 it means the air inside the respirator was 100 times cleaner than the air outside.

In the U.S., fit testing is required, although in Europe it is not. Therefore, some of these studies mandated a fit test prior to measuring the WPF[1-13] while others did not.[14-17] Figure 1 shows the distribution of data from these studies on half-facepiece respirators grouped according to whether fit testing was performed. When fit testing was used to screen out poor-fitting half facepiece respirators, a significant improvement in performance was found.

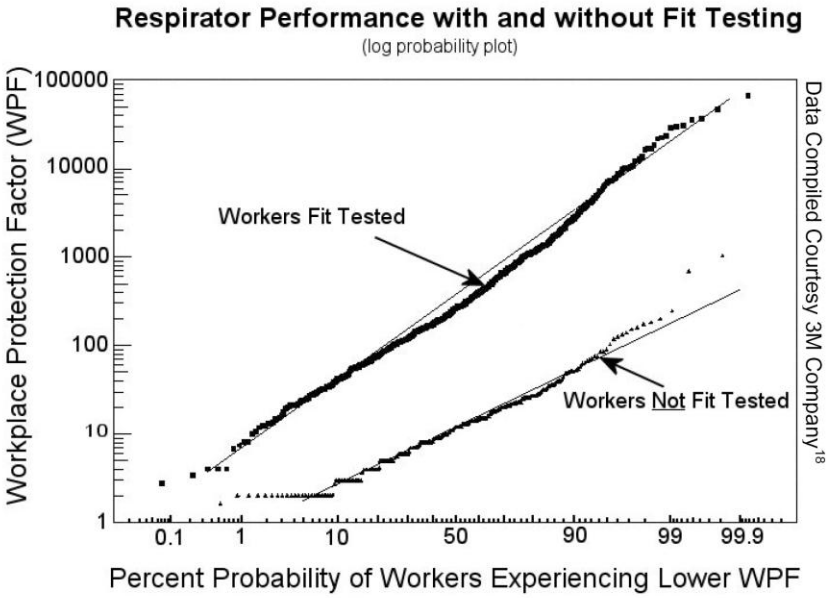

Figure 1

How to read the log probability plot (an example)

Since the data was collected on half-face respirators, let's use a minimum acceptable WPF of 10, which corresponds to the rating assigned to half-face respirators in the U.S, Canada and the U.K. On Figure 2, a horizontal line representing a WPF of 10 intersects the Workers Not Fit Tested data at about 45 percent. This means that 45 percent of the workers who were not fit tested failed to achieve the minimum protection level of 10 that is expected from a half-face respirator. The same horizontal line intersects the Workers Fit Tested data at about 2. That means that only 2 percent of fit tested workers failed to achieve the protection level of 10. Looking at these results from a more positive viewpoint; 98 percent of fit tested workers exceeded the minimum protection level compared to only 55 percent of non-fit tested workers.

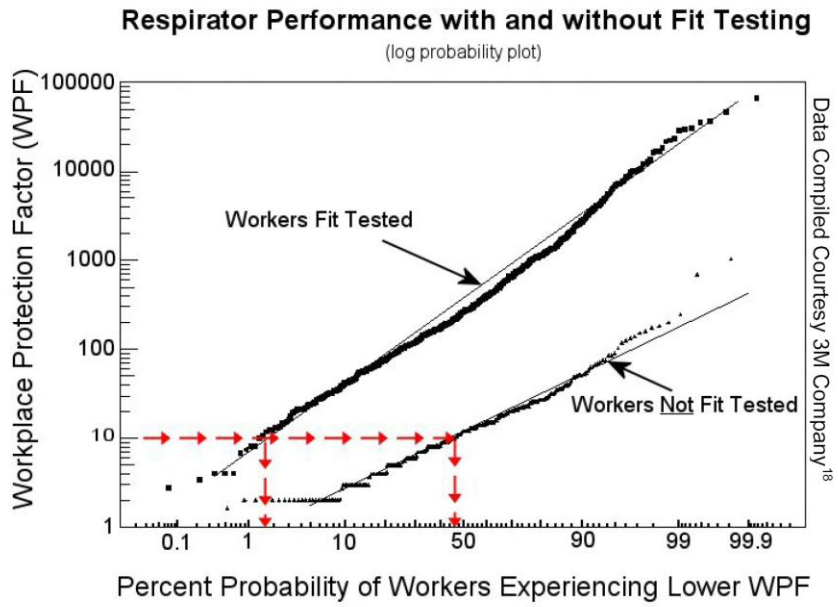

Figure 2

In addition, the graph shows that fit tested workers achieve much higher protection levels than non-fit tested workers. For example, 50 percent of fit tested workers achieved a WPF near 200, while 50 percent of non-fit tested workers only achieved a WPF of about 12.

Summary

While the data presented may not predict actual workplace respirator performance, from a comparative viewpoint, it illustrates the benefit of fit testing. Screening workers with a fit test is useful for identifying those with poor-fitting respirators.

Based on the data presented above, we can conclude that it is beneficial to perform fit testing prior to respirator assignment. Benefits include the following:

- Fit tested workers achieve higher levels of protection from their respirator.
- Fit tested workers are more likely to stay healthy and be productive longer.
- Healthcare expenses are likely to be lower for fit tested workers.
- Employer liability is reduced when workers are fit tested.

References

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***Note**: Fit testing was not conducted in References 14-17.*

