
Health and Safety

Respirator comfort, get a PAPR on your back!

Chris Stavroudis, column editor

I'm part of a team working on mural projects on the sides of some of LA's freeways. We are working behind K-rail, so we are safe, but let me tell you, it's not a healthy place. The air is foul – diesel particulates, car fumes, odors you don't even want to guess the source of, and muck. And noise.

One of my goals was to make sure that everyone working on the project was as comfortable, safe, and healthy as was possible given that they are working on the side of an LA freeway. And while I'm not 100% satisfied with our level of comfort, it's pretty darn good and worth passing along.

Our environmental cocooning is made possible by two complementary devices: a PAPR and noise canceling headphones.

PAPR stands for Powered Air Purifying Respirator. We are using the 3M "Breathe Easy." It consists of three respirator cartridges (HEPA combined with organic vapor), a belt carried "Turbo Unit" (a small fan that pulls the outside air through the cartridges and blows it gently to the wearer), a rechargeable battery pack that also mounts on the belt, and a helmet. The beauty is in the helmet. There is a dazzling array of options to take the filtered air and deliver it to your face, but I love my "Breathe-Easy 1" helmet. It's a hard hat, it's a face shield, it's (reasonably) comfortable, and it works on any face – bearded or clean shaven, bespectacled or of sound vision, large or small, sporting a dueling scar or just wearing makeup.

The air is taken from the "Turbo Unit" via a "Breathing Tube" (yes a separate purchase that looks like a short piece of black vacuum cleaner hose) to the helmet. The "Breathing Tube" connects to a coupling at the back of the helmet. And here's the beauty, the filtered air is blown over the top of your head, down your face and gently made available for your breathing comfort. There is a Tyvec gusset (or "Protective Overlay") that bridges the gap between the face shield and the sides of your face and neck.

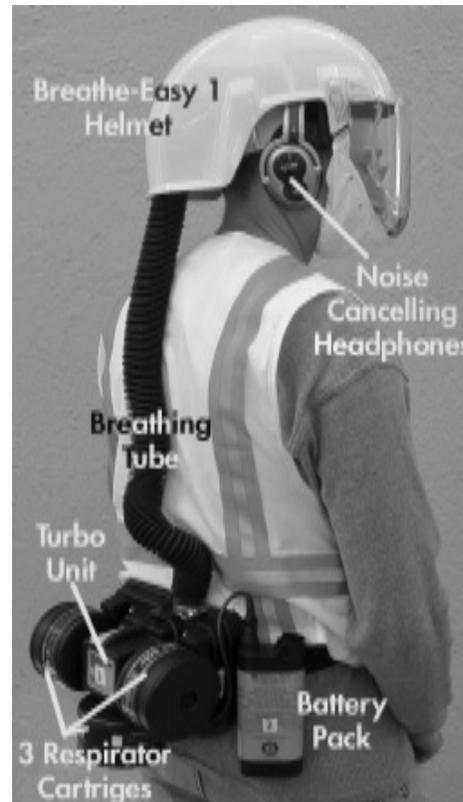
The "Turbo Unit" provides enough airflow under positive pressure that when you inhale there is still filtered air blowing past the gusset keeping your breathing space uncontaminated. And perhaps the most subtle design element is in the balance: the weight of the hose on the back balances the weight of the face shield in front, giving this bulky head piece a very neutral feeling when worn.

Compared to working with a half mask respirator, wearing this get-up is a charm, a pleasure, a (cool) breeze. The rechargeable battery packs seem to last their stated 8 hours (we have only worked 5 hours at a go thus far).

The system is not inexpensive by any means. The full get-up with battery charger will run just under \$1,200.00. But if you've got a big, yucky job and value your comfort, or if you really, really like your beard, this is the way to go.

To make this little piece of respiratory heaven even better, we've fitted the helmets with noise canceling headphones.

We tried a number of different models, but were most pleased for the cost with the Philips SBC HN100 (about \$75). It is an over-the-ear style headphone designed for listening to music in noisy environments (like an airplane). Microphones listen to the noise and make canceling noise to neutralize it. It works pretty well, best for low frequency noise that is continuous. Interestingly, it doesn't really cancel out voices.



I guess the noise of your colleague talking is not continuous enough for the headphones to act on.

It is important to note that these headphones are for comfort only. They are not rated for true hearing protection. I think soon we will see protective ear muffs with noise canceling capabilities, but I haven't found any yet.

The other nice feature we are still working on, is connect-

ing the headphones to a walkie-talkie, putting a microphone inside the helmet and allowing people to talk with each other. It sort of works, but the voice activated microphones were constantly activated by the noise of the "Turbo Unit." Once you've got everything wired together, you can also plug your Walkman into the headphones, or even your cell phone. It's pretty odd making a phone call from inside a filtered air, noise cancelled cocoon while standing on the side of the freeway.

And on the more bad news front:

In the January 19th, 2004 edition of the *Los Angeles Times*, the article "Elevated levels of arsenic discovered in young chickens" by Jane E. Allen reported that arsenic is fed to chickens to control intestinal parasites. While the amount is not much, even if you eat a lot of chicken, it can add to your total body burden. So here is another reason to reach for organic chicken at the market, particularly if you work with materials that might expose you to small amounts of arsenic.

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