

3M Science.
Applied to Life.™

3M™ Breathe Easy™ (CBRN)
Powered Air Purifying Respirator (PAPR) System
for Emergency Preparedness

Be prepared. Stay protected.

Provide first responders the tools they need to be prepared
for natural disasters, mass casualties, or acts of terrorism.



Your partner in preparedness.

Through decades of global emergencies, 3M has been on the frontlines offering support. From preparation to clean-up, our leading personal protective equipment has helped protect first receivers from some of the worst environments imaginable. 3M continues to be a safety leader before, during, and after world crises. Prepare your team with products that have helped first receivers stay protected for decades. **Through decades of global emergencies, 3M has been there.**

**3M emergency
preparedness
specialists**

are here to support you.



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Examples of Recent Incidents Requiring Emergency Response

⊕ Health Epidemics, 🌪 Natural Disasters, ⚠ Accidents and 🎯 Terrorism

1997	Avian flu (H5N1)			
2001	Swine flu	Ebola (filovirus)	9/11 World Trade Center	Anthrax
2003	Chicken flu	ESARs (CoV)		Forest Fire (France)
2004	Typhoons & Floods (SE Asia)		Earthquakes (Japan)	Coal Mine Explosions (China)
2005	Avian flu (H5N1)	Pakistan (Kashmi) Earthquake	Hurricane Katrina (New Orleans)	Chemical Plant Explosions (China)
2006	Avian flu (H5N1)	Ecuador Volcano	Indonesia Earthquake/Tsunami	Nigerian Oil Blast
2007	Avian flu (H5N1)		Korean Oil Spill	
2008	Hurricane Ike		California Wild Fires	
2009	Pandemic H1N1/09 virus			
2010	Pandemic H1N1/09 virus			
2011	Hurricane Irene		Japan Tsunami	
2012	Japan Tsunami		Super Storm Sandy	
2013	Avian flu (H7N9)	MERS	Moore Oklahoma Tornado	SEA Haze (SE Asia)
2014	Ebola (filovirus)			
2015	MERS		San Bernardino Shooting (CA)	
2016	Zika	Baton Rouge Flooding	Hurricane Matthew	Orlando Club Shooting (FL)

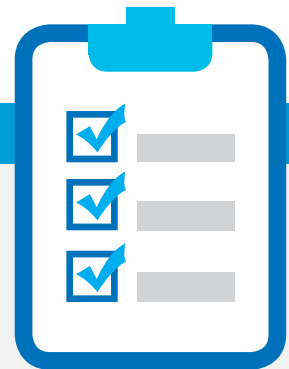


Breathe easier during emergencies.

Emergency workers need respiratory protection that allows them to work efficiently as they complete their jobs. 3M™ Breathe Easy™ Powered Air Purifying Respirators (PAPR) offer continuously filtered air to healthcare, military, and public health professionals during events like natural disasters, mass casualties, or acts of terrorism.

The 3M™ Breathe Easy™ PAPR systems used for first receiver, patient decontamination programs are approved to the chemical, biological, radiological, and nuclear (CBRN) loose-fitting PAPR standard developed by the National Institute for Occupational Safety and Health (NIOSH) for gases and vapors. The high efficiency filters in a CBRN cartridge filter out 99.97% of particulates.

3M's RBE loose fitting CBRN PAPR System is widely fielded in the United States; this footprint across the nation is **critical to supporting mutual aid** across hospital coalitions and public health agencies.



A smart choice.

3M™ Breathe Easy™ PAPR systems feature CAP 1 rated cartridges that help minimize overall weight while maintaining the appropriate level of respiratory protection and comfort.

Some key benefits of these systems are:

- Wide field of vision, for clarity while managing an event or during training.
- The one-size butyl rubber hood doesn't require a fit test.
- Can be used with eyeglasses and limited facial hair.
- **Continuously filtered** air flow provides respiratory protection and lasting comfort, which can help increase focus on the task at hand.
- System functions with three battery options:
 - **520-04-57R01:** White, non-rechargeable, lithium-ion battery lasts up to 12 hours. 10-year shelf life.*
 - **TR-630:** Rechargeable lithium-ion battery with charge status indicator. Lasts up to 9 hours and is 90% charged in <3.5 hours.*
 - **BP-15:** Rechargeable Nickel metal hydride (NiMH) battery for training; lasts up to 8 hours.*

NOTE: The charger for this battery is no longer available. However, new BP-15 batteries can be acquired for use with previously purchased chargers.

- 3M's unmatched customer and technical service offers peace of mind.
- 3M has the experience you can trust.
- Duffel bag offers convenient storage and quick access in emergencies.
- The hands-free vinyl holster and belt allow for easy, decontamination.



* Battery duration can vary depending on the age of cells, temperature and filter loading.



A long-lasting solution.

With the creation of the Office of the Assistant Secretary for Preparedness and Response in 2006, funding became available for hospitals and healthcare facilities for the purchase of personal protective equipment to prepare for and respond to adverse health effects of public health emergencies and disasters. Much of the equipment purchased during this time has aged. As such, 3M has invested resources to help understand the effects of time on the 3M Breathe Easy butyl rubber hood.

An outcome of this study

identified the need to recommend a 10-year shelf life for the 3M™ Butyl Rubber Hood BE-10BR. Customers should also regularly inspect the hoods for damage that may compromise the integrity of the hood, as outlined in:



[Product User Instructions](#)

[Inspection Guidance Document](#)



**RBE-600
Battery Upgrade Kit**

Charging forward.

3M knows that lighter, more advanced products can help those who help save lives. Our teams seek out new technologies to help first responders manage their patient decontamination programs. With that in mind, the TR-630 Versaflo™ Standard rechargeable battery can now be used with 3M™ Breathe Easy™ CBRN PAPR systems to keep our customers on the forefront of technology and innovation. The TR-630 lithium-ion battery offers simplified charging and storage maintenance when compared to the BP-15 battery and is NIOSH approved as part of your current 3M™ Breathe Easy™ CBRN PAPR system when paired with the new TR-659 adapter and TR-657 easy clean holster. Available as individual components or as a RBE-600 Upgrade Kit.

*The rechargeable 3M™ Battery Pack NiMH (BP-15) is still available for purchase, but the 3M™ Smart Battery Charger (BC-210) is no longer available.



**RBE-HUP
CBRN Upgrade Kit**

Go with best practice.

Personal protective equipment (PPE) should adequately protect workers during events that expose them to dangerous chemical, biological, radiological, or nuclear (CBRN) hazards. While OSHA has not yet required NIOSH certified, CBRN respiratory protection, certain government grants for PPE require CBRN approval. Considered a best practice for emergency preparedness and patient decontamination, this approval can be attained for customers using non-CBRN 3M™ Breathe Easy™ FR-57L10 or FR-57N10 systems. If you are currently using one of these systems, a simple upgrade kit can make your equipment CBRN compliant.

- For FR-57L10, use the RBE-HUP Upgrade Kit
- For FR-57N10, use both the RBE-HUP and RBE-600 upgrade kits

These systems can also be converted to address biological respiratory hazards by using the BE-12-BIOKIT and BE-12L-BIOKIT.

What do CAP ratings mean?

All CBRN certified PAPR cartridges are rated per their capacities or CAP, but that rating does not determine the respiratory assigned protection factor (APF) of the system. These CAP ratings were developed by NIOSH to offer insight on the length of time a cartridge or canister can function under laboratory test gas conditions.

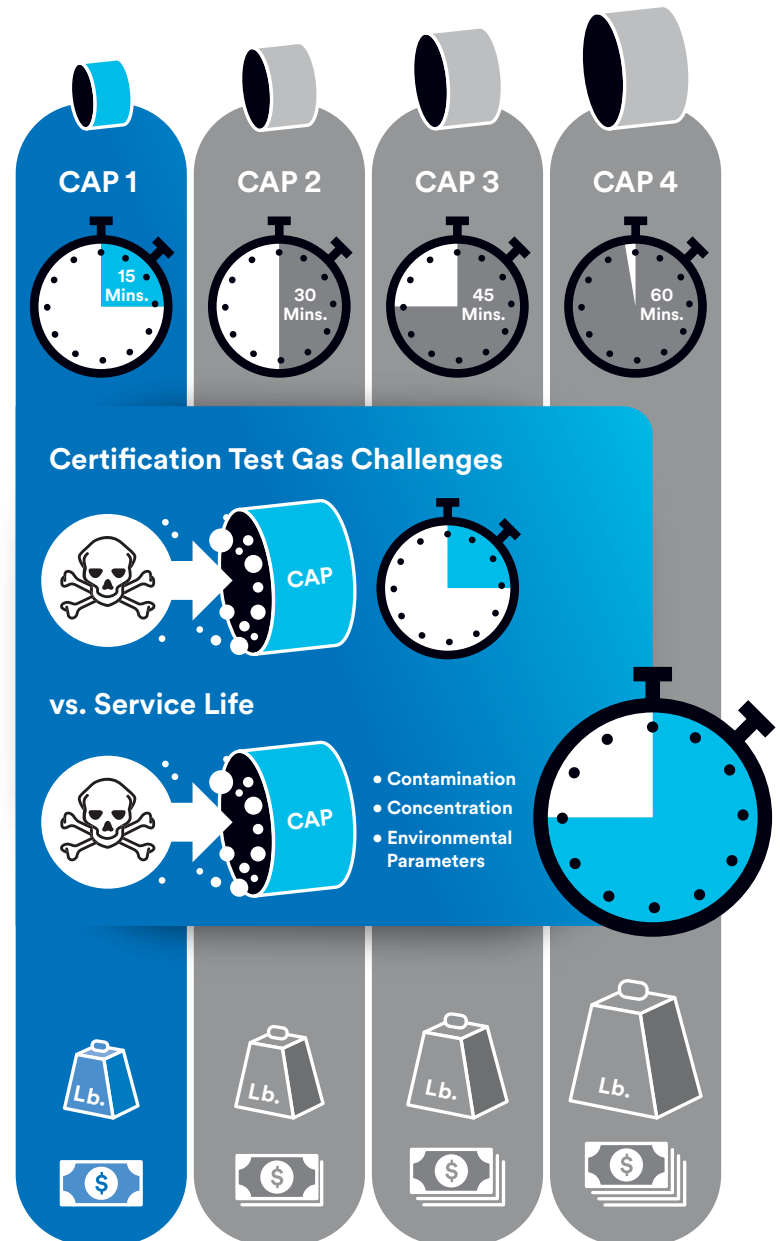
There are four levels of CBRN cartridge and canister testing. These levels classify product capacity using preselected times: CAP 1 (15 minutes), CAP 2 (30 minutes), CAP 3 (45 minutes), CAP 4 (60 minutes). Cartridges or canisters that receive a CAP 1 approval must not exceed breakthrough concentrations during a test lasting a minimum of 15 minutes. Longer tests are completed for CAP 2, 3, and 4 ratings with the requirement that they not exceed breakthrough concentrations.

When selecting a CBRN cartridge, it is important to understand what these ratings do and do not mean.

Know your CAP.

CAP ratings are the outcome of certification tests under extreme conditions, and are not directly reflective of workplaces. Most notably, the gas challenges used to test cartridges for a CAP rating are often 2–3 times those that would be immediately dangerous to life or health (IDLH). Therefore, cartridges rated at a CAP 1 level may offer more than enough capacity for exposure longer than 15 minutes during the typically low concentrations experienced in exposure events seen by first responders, such as hospitals. Service life estimators can help you when determining which cartridge capacity works for you.*

Moreover, just because a product has a CAP 2, 3 or 4 approval does not mean that it is always the best choice. A larger capacity often means a larger/heavier cartridge adding weight to the overall system, and possibly a greater cost.



For more information, see 3M Technical Data Bulletin #191 — NIOSH CBRN Cartridge/Canister Capacity Ratings

[Click Here](#)

3M™ Breathe Easy™ PAPR systems help workers move around easily in challenging environments while providing protection they need.

Understanding APF and Cartridge Capacity.

The 3M™ Breathe Easy™ PAPR systems for emergency preparedness feature Cap 1 cartridges and an APF of 1000.¹ Although these are key features, it's important to understand that Cap ratings have no relationship to Assigned Protection Factors (APFs). APFs are assigned by OSHA based on the respirator system type and not the cartridges, canisters, or filters being used. Therefore, a CBRN respirator is assigned the same level of protection when utilized with a Cap 1 cartridge as it is with a Cap 2, 3 or 4 cartridge.

1. OSHA assigned protection factors defined in 29 CFR 1910.134. 3M supports an APF of 1000 for the 3M™ Breathe Easy PAPR systems for emergency preparedness. Contact 3M Technical Service for supporting test procedures and data.

* 3M™ Service Life Software is designed to help estimate service life of 3M gas/vapor respirators and cartridges.



Testing for CBRN requirements.

NIOSH initially identified 151 toxic industrial chemicals, chemical warfare agents, and toxic industrial materials that would require a CBRN PAPR during their review of information from government agencies and technical data. That list was narrowed to 139 hazards which were then grouped by families. One test representative agent was chosen to represent each of the ten hazard families. Cartridges or canisters must not exceed breakthrough concentrations of these hazards to be certified.

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What are the 3M™ Cartridge RBE-57 test challenge and breakthrough concentrations?

Canister and Cartridge Test Challenge and Test Breakthrough Concentrations

Test Chemical	Canister*		Cartridge	
	Test Concentration (ppm)	Breakthrough Concentration (ppm)	Test Concentration (ppm)	Breakthrough Concentration (ppm)
Ammonia	2,500	12.5	1,250	12.5
Cyanogen chloride	300	2	150	2
Cyclohexane	2,600	10	1,300	10
Formaldehyde	500	1	250	1
Hydrogen cyanide	940	4.7**	470	4.7**
Hydrogen sulfide	1,000	5.0	500	5.0
Nitrogen dioxide	200	1 ppm NO ₂ or 25 ppm NO [†]	100	1 ppm NO ₂ or 25 ppm NO [†]
Phosgene	250	1.25	125	1.25
Phosphine	300	0.3	150	0.3
Sulfur dioxide	1,500	5	750	5

* 3M Company does not currently offer a CBRN powered air purifying respirator canister for sale.

** Sum of HCN and C₂N₂

† Nitrogen Dioxide breakthrough is monitored for both NO₂ and NO. The breakthrough is determined by which quantity, NO₂ or NO, reaches breakthrough first.

Supporting strong emergency responses.

Across the nation 3M™ Breathe Easy™ (RBE) Powered Air Purifying Respirator Systems are a top choice for emergency response programs in both civilian and military hospitals. In addition to being a time-tested product, this broad-based distribution helps hospital coalitions and public health agencies support mutual aid. The ability to provide and receive emergency aid beyond local resources is critical to maintaining a strong emergency response program.



For additional information regarding specifics on the 3M™ PAPR Systems parts,

download the following technical bulletins:

1. Determination of Service Life for NIOSH CBRN approved 3M™ Cartridges & Canisters:

[Click Here](#)

2. NIOSH CBRN Cartridge/Canister Capacity Ratings:

[Click Here](#)



Specifications

Specifications	Description
Battery packs: Lithium battery (non-rechargeable)	Up to 12 hours of use and has a 10-year shelf life
Lithium Ion battery (rechargeable)	Up to 9 hours of use per charge when used with 3M™ Versaflo™ Battery Adapter TR-659; Time to recharge typically less than 3.5 hours
Battery pack weight: Lithium	Approximately 1.0 lb (450 g)
Li-Ion with Battery Adapter TR-659	Approximately 1.3 lb (590 g)
Battery storage temperatures: Lithium (non-rechargeable) Lithium-Ion (rechargeable)	-67°F to 176°F (-55°C to 80°C) -22°F to 122°F (-30°C to 50°C) with relative humidity <85%. Optimal storage temperature of 59°F (15°C)
Battery charging temperatures	Li-Ion: Internal battery pack temperature must be between 32°F (0°C) to 104°F (40°C) — Do not charge outside of this range. Optimal charging temperature 68°F to 77 °F (20°C to 25°C).
Charger	Maintains lithium ion battery. Time to recharge typically less than 3.5 hours.
Airflow range	Greater than 6 scfm (170 lpm)
Weight of blower and cartridge	Turbo unit with 3M™ Cartridge RBE-57: approximately 4 lb (1830 g)
System operating temperatures	10° to 120°F (-12° to 49°C)
Hood material	Butyl rubber
Cartridge	“Cap 1” approved cartridge. Minimum test life of 15 minutes against NIOSH test agent concentrations.



Please visit
**3M.com/
FindPPerep**
or contact your
3M representative
for more information.

Ordering Information

Full Systems Part Number	Description	3M ID	UPC
RBE-L10	3M™ Turbo PAPR Unit 022-00-03R01, 3M™ Butyl Rubber Hood BE-10BR, 3M™ Breathing Tube RBE-BTH, 3M™ Decon Belt RBE-BLT, 3M™ Cartridges RBE-57, 3M™ Battery Pack 520-04-57R01 (Lithium – non-rechargeable), 3M™ Airflow Indicator 520-01-21.	70071287885	00051131918993
RBE-NM10	3M™ Turbo PAPR Unit 022-00-03R01, 3M™ Butyl Rubber Hood BE-10BR, 3M™ Breathing Tube RBE-BTH, 3M™ Decon Belt RBE-BLT, 3M™ Cartridges RBE-57, 3M™ Battery Pack BP-15, (NiMH – rechargeable), 3M™ Airflow Indicator 520-01-21. This system does not include battery charger.	70071287919	00051131919020
RBE-10BR	3M™ Turbo PAPR Unit 022-00-03R01, 3M™ Butyl Rubber Hood BE-10BR, 3M™ Breathing Tube RBE-BTH, 3M™ Decon Belt RBE-BLT, RBE-SC Shower Cover, 3M™ Cartridges RBE-57, 3M™ Airflow Indicator 520-01-21, 3M™ Versaflo™ Battery Adapter TR-659, 3M™ Versaflo™ Easy Clean Holster TR-657, 3M™ Versaflo™ Standard Battery TR-630, 3M™ Versaflo™ Single Station Battery Charger TR-641N, Duffel Bag.	70071676152	00051131275416
Components Part Number	Description	3M ID	UPC
BE-10BR	3M™ Hood Butyl Rubber, 1/Case	78812400949	00051138720940
022-00-03R01	3M™ Breathe Easy™ Turbo Powered Air Purifying Respirator (PAPR) Unit, 1/Case	70070884989	00051138721947
520-04-57R01	3M™ Battery Pack Lithium (non-rechargeable), 1/Case	78812400626	00051138720629
BP-15	3M™ Battery Pack, NiMH (rechargeable), 1/Case	70071094182	00051131916449
520-01-21	3M™ Airflow Indicator, 1/Case	78812400568	00051138720568
RBE-BLT	3M™ Decon Belt, 1/Case	70071287778	00051131918887
BLT-100	3M™ Belt Buckle, 1/Case	70071401130	00051131919617
RBE-BTH	3M™ Breathing Tube, Hood, 1/Case	70071287794	00051131918900
RBE-CMP	3M™ Breathing Tube, Clamp, 1/Case	70071287851	00051131918962
RBE-57	3M™ Cartridge, Hood, 6/Case	70071287760	50051131918875
TR-659	3M™ Versaflo™ Battery Adapter	70071676103	00051131275362
TR-657	3M™ Versaflo™ Easy Clean Holster	70071676087	00051131275348
TR-630	3M™ Versaflo™ Standard Battery	70071618170	00051131373471
TR-641	3M™ Versaflo™ Single Station Battery Charger	70071618204	00051131373501
Optional Parts Part Number	Description	3M ID	UPC
RBE-SC	3M™ Shower Cover, 2/Case	70071401932	50051131985464
RBE-TRN	3M™ Training Cartridge (red), 3/Case	70071287943	50051131919056
RBE-FIH	3M™ Hood Insert, 1 EA/Case	70071405750	00051131989290
Upgrade Kit	Description	3M ID	UPC
RBE-600	3M™ Versaflo™ Battery Adapter TR-659, 3M™ Versaflo™ Easy Clean Holster TR-657, 3M™ Versaflo™ Standard Battery TR-630, 3M™ Versaflo™ Single Station Battery Charger TR-641N.	70071676129	00051131275386
RBE-HUP	3M™ Butyl Rubber Hood (BRH) Systems FR-57L10 and FR-57N10. Upgrade Kit includes 3M™ Breathing Tube RBE-BTH with Clamp, 3M™ Decon Belt RBE-BLT and 3M™ Cartridge RBE-57.	70071287877	00051131918986
BE-12-BIOKIT (Regular)	3M™ Breathe Easy™ 12 Bio Conversion Kit. 3M™ Breathe Easy™ Loose Fitting PAPR White Head Cover (3/Kit), BE-12, 3M™ Breathing Tube 520-03-32R01, 3M™ Cartridge HE (P3) 450-00-01 (3/Kit).	70071517034	00051135894910
BE-12L-BIOKIT (Large)	3M™ Breathe Easy™ 12 Bio Conversion Kit, Large. 3M™ Breathe Easy™ Loose Fitting PAPR White Head Cover (3/Kit), Large BE-12L, 3M™ Breathing Tube 520-03-32R01, 3M™ Cartridge HE (P3) 450-00-01 (3/Kit).	70071517034	00051135894927



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For More Information

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www.3M.com/pppe

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