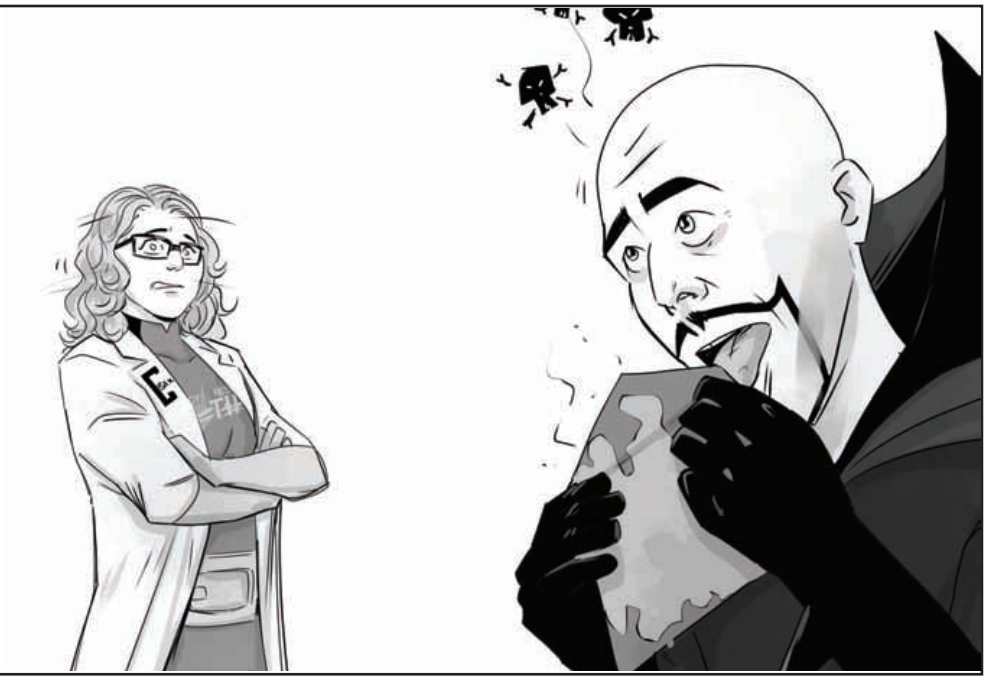
Dr Christina Baxter, of EmergencyResponseTIPS.com and Hazard3.com, offers helpful advice for first responders

Keeping you safe!

This column aims to provide operational guidance to the hazmat/CBRNE community on the selection and performance of equipment and tactics. The topic this time is responding to suspicious substances in mail items or 'white powder' incidents.

Most of the early protocols emerged following the 2001 anthrax events in the US and focused on biological agents. Since then white powder events have continued but not on the same scale, and hoaxes are the norm.



While response arrangements and the field detection technologies available have improved, the range of threat materials and targets have also expanded. Threat materials have included energetic materials, toxins like ricin, strychnine and cyanide salts, and, most recently, fentanyl. The US has seen a steady increase in white powder calls since November 2023, often related to election mail handling. It is important to remember that these calls may become crime scenes, rules of evidence will apply and other agencies may be involved, but the basics still apply. If your jurisdiction has not updated its response guidelines, ensure they are contemporary and responders can detect and safely resolve the evolving range of threat materials used, including radiological, chemical and biological agents.

Initial emergency response considerations
First, determine if the package is suspicious. The US Postal Service uses the acronym SLAP, referring to unusual shape, look, address features, or packaging, for identifying suspicious mail. For example, does the package seem to be of unusual weight given its size? Is it oddly shaped? Is there a return address? Excessive postage? Misspelled words? Written in all block letters? Sent to positions not specific people? Sealed with excessive tape? Are there oily stains, discolouration, or strange odours? If the answer to any of these questions is 'yes' then the package may be considered suspicious.

The US Postal Service recommends the Three Ps, meaning package, people and plan for initial workplace response to a suspicious mail item. There are mail handling standards and industry guides that facilities can use to prepare for white powder incidents.

For responders it has been demonstrated that closing doors and controlling air conditioning systems reduced the spread of biological spores, but they are readily resuspended in air from surfaces. Fine chemical particulates exhibit similar behaviour within enclosed areas. This influences PPE decisions, decontamination, and management of people affected to reduce agent spread.

Hazmat/CBRN response considerations
Assess the incident following your response protocols and select appropriate PPE to protect your respiratory system and skin. Isolate all potentially exposed individuals together until they can be evaluated by emergency medical and hazmat personnel. Consider hybrid decontamination procedures to minimise exposure and ensure that those affected do not touch their eyes, mouth, nose, or skin. For example, blot away any obvious contamination, apply soap and water to the areas of concern, and then remove the decontaminant by wiping, rinsing and/or active drying. Avoid pulling clothes over people's heads or actions that can re-suspend the threat material.

Assess potentially exposed personnel for signs and symptoms of exposure in accordance with your response protocols. Remember that exposure to toxic chemicals may present with immediate effect while biological exposure symptoms may be delayed for hours or days. Public health agencies may provide guidance on subsequent actions if delayed symptoms appear.

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Samples must be collected following established forensic protocols, including photography and chain of custody, so that the threat agent can be identified. Identification can be on site or at a nominated laboratory. But remember the breadth of threat agents that need to be identified when reviewing your arrangements. Don't focus on a single threat type like anthrax. Standards and guides, such as ASTM E-2459 standard practice, can inform your practices.

All samples must be screened for radiation, explosives and chemical threats in that order prior to on site identification or transport to a lab. This is especially critical when separate laboratories are required for chemical and biological threats. Samples that are suspected of being biological in nature may require a wet and dry sample depending on your arrangements with the nominated laboratories.

Ensure your detection portfolio can identify current and emerging threat agents. To rule out explosives, indicating papers like oxidiser, peroxide and perchlorate test strips can be used as can advanced technologies such as ion mobility spectroscopy, mass spectrometry, or fluorescence. Established technologies such as Raman or FTIR spectroscopy can be applied along with biological agent identification technologies. Remember, Raman and FTIR spectroscopy can only identify the bulk materials in a mixture, so absence of a threat identification does not mean that the threat isn't there. Rather, it means absence of the threat in high concentration. Mass spectrometry or surface enhanced Raman spectroscopy techniques are used to evaluate trace levels of a threat material within a solid matrix. Immunoassay techniques are available for trace detection of a limited number of threats, including fentanyl. Remember, not all threats can be ruled out using these techniques and ensure arrangements with your nominated laboratories are established and practised.

Bulk **Trace**

See past CBax articles for more information on sampling (October 2020), biodetection (August 2022), hybrid decon (February 2021), dry decon (June 2024), and others.

Images are courtesy of Phil Buckenham *https://philbuckenhamart.wixsite.com/philbuckenham*