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Household Hazardous Materials Identification

Introduction



Common materials found in homes and businesses have the potential of creating hazardous waste if not disposed of properly, especially when their containers break or leak (see Table 1). First responders have the need to identify these potentially hazardous materials immediately in order to correctly mitigate the potential threat to others.

Actionable identification

Raman technology provides responders with a molecular fingerprint of substances and material identification. Raman spectroscopy is a nondestructive, non-contact method and can be used to analyze through glass, plastic bags and bottles, providing protection from potentially hazardous exposure.

The [Rigaku CQL handheld series analyzers](#) utilize a unique 1064 nm excitation laser. The 1064 nm advantage allows responders to detect the most comprehensive list of substances using a library of over 12,000 compounds – including cleaning, automotive, pesticide, or precursor materials as well as analyze colored substances or through colored containers (see Figures 1-4 as examples of potentially hazardous household chemicals).

Cleaning Products	Acids
	Degreasers

Automotive Products	Gasoline and diesel
	Oil and fluids
Lawn and Garden Products	Pesticides
	Fertilizers
Workshop / Painting Supplies	Halogenated hydrocarbons
	Alcohols
Flammable Products	Gasoline
	Starter fluids
Miscellaneous	Mystery products from decades past
	Formaldehyde
	DDT

Table 1. The U.S. Environmental Protection Agency (USEPA) has grouped their list of hundreds of potential chemicals into these categories.

Conclusion

Accurate identification of unknown household chemicals can assist [first responders](#) to quickly and safely mitigate dangerous situations and also facilitate the correct disposal process for the hazard. Rigaku's unique [1064 nm laser technology](#) facilitates the identification of hazardous chemicals which are often found in residential environments. Using an onboard library containing over 12,000 chemicals.



Figures 1-4. Analysis of gasoline through colored glass and analysis of ammonium nitrate through plastic container using a Rigaku CQL handheld analyzer.

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CQL Gen-ID

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