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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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HANDHELD CONFIDENCE. 

APPLICATION NOTE

HOUSEHOLD HAZARDOUS MATERIAL IDENTIFICATION USING HANDHELD 1064 nm RAMAN

- Analyze through containers
- Identify a wider range of substances
- Determine threat severity in seconds

Common materials found in homes and businesses have the potential of creating hazardous waste if not disposed of properly, especially when the 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 equipment.

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, pesticides, or personal care materials as well as illegal colored substances in through-colored containers (see Figures 1-4 as examples of potentially hazardous household chemicals).

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 for reference, virtually any unknown chemical can be identified within seconds using safe, non-contact sampling.

Cleaning Products	Acids Deodorizers Glaucol and Descal Oil and Grease
Automotive Products	Pesticides Car Wash
Lawn and Garden Products	Hydroponic Nutrients Fertilizers
Workshop/Working Supplies	Greases Solvent Fluids
Flammable Products	Mystery products from deactivating Fire extinguishers
Miscellaneous	DOT

Table 1. The US Environmental Protection Agency (EPA) has grouped their list of hundreds of potential chemicals into Hazard Categories.

Figure 1. 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, pesticides, or personal care materials as well as illegal colored substances in through-colored containers (see Figures 1-4 as examples of potentially hazardous household chemicals).






Figure 1. Handheld series analyzer showing a green liquid in a container.
Figure 2. Handheld series analyzer showing a red liquid in a container.
Figure 3. Handheld series analyzer showing a yellow liquid in a container.
Figure 4. Handheld series analyzer showing a blue liquid in a container.

Rigaku Analytical Devices, Inc.
10000 W. 10th Ave., Suite 100
Denver, CO 80202, USA
Phone: +1 303 750-7000
www.rigaku.com

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