"Using Detective Skills"

In many cases there will be clues to aid in identification or hazard classification of an unknown substance.

Question the customer thoroughly to obtain as much information as possible about the unlabeled container. Use questions similar to the following:

1. Can you identify this substance by product name or contents?
2. What was it used for?
3. Is it in its original container?
4. When was the last time you opened the container? Did it have an odor, if so please describe it? Any color/consistency changes?

Record the interview and keep with the container to aid in chemical identification later.

If the container has a label but does not list ingredients, other information may provide a key to determining the proper classification. In some cases, products will have warnings such as "Flammable," "Combustible," or "Poison." These warnings, although not always definitive, may provide an indication of the material's hazard class.

Class 3 Flammable liquid – Combustible; contains petroleum distillates; keep away from heat, open flame or spark; use in well-ventilated area; avoid prolonged contact with skin or breathing of vapors; keep container closed when not in use.

Class 6 Poison – Toxic, do not breathe vapors, harmful if swallowed, keep away from children, avoid contamination of food or food stuff.

Class 8 Corrosive – Dilute with water, do not induce vomiting, causes severe burns, and give a specified liquid. In addition, bases use words such as "caustic", "alkali", and/or "hydroxide".

In some cases there may be a partial label present perhaps with a catalog number or lot number intact. Contact a chemical supplier with this information; they may be able to help. Reference books can also assist in determining the ingredients of most of these "mystery compounds," but a few will have to be classified as unknown. Looking up the MSDS sheet or any other reference sources should provide the necessary information.

The material of the container can give clues to its contents.

- Plastic or plastic-lined containers are often used for strong acids or bases
- Is the container glass? If yes, is it clear or amber glass? Amber glass can be an indicator that the substance is light sensitive.
- Is the container professionally sealed? This can be an indicator of a substance that is air or water reactive
- Exotic metals, such as aluminum, nickel, galvanized, and/or stainless may indicate that an extremely dangerous material is present inside
- Single-walled containers used as a pressure vessel may indicate the presence of inert gas surrounding reactive, flammable, or explosive materials
- A bulging or warm container may indicate the contents are under pressure

The presence of a seal (wax, metal, metal tape or plastic tape) often indicates a possible reactive chemical, one which must not be exposed to air, water or other chemicals. A cohesive solid contained in a liquid, such as oil or water, may indicate a material reactive with air or water. White phosphorus or sodium metal are two examples.

Safety Precautions

For your safety, you should adhere to the following guidelines when performing any screening procedure on unknown substances.

1. Perform procedures in a well-ventilated, controlled area away from waste storage areas. Persons downwind should not smell the unknown substance.
2. Wear resistant gloves and eye protection such as goggles or face shield.
3. Secure all loose clothing and hair.
4. Avoid physical contact with the substance, do not touch or smell.
5. Have an ABC fire extinguisher on hand in case of an unexpected violent reaction or fire.
6. Have a first aid kit available in case of injury.
7. Prior to the procedure, locate and test the nearest safety shower in case of an emergency.
8. Use a very small quantity of the unknown substance for testing.
9. Perform procedures according to established facility protocol and record all work.
10. If you are uncomfortable performing procedures, request your Supervisor find a qualified individual at your facility to perform them.