Proengin

HEADSPACE SAMPLER KIT
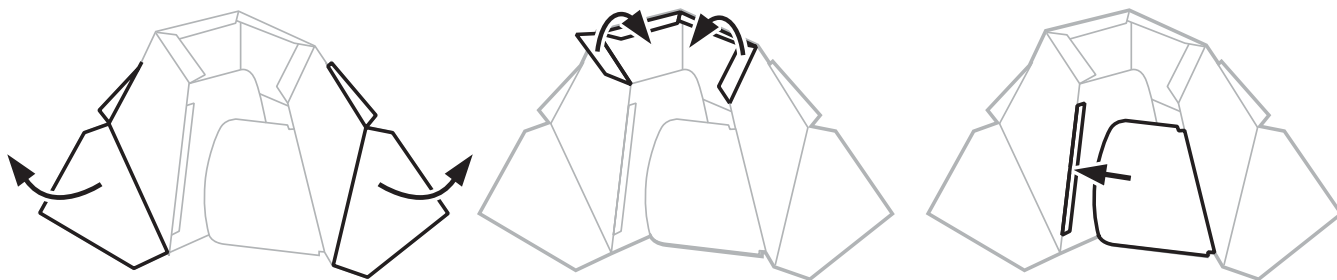
QUICK START GUIDE

① Remove sampler from A4 kit (along pre-cut lines).

② Fold the sampler (along pre-set fold lines) by folding flaps and inserting lock tab.

NOTE:
Base flaps fold outward while top flaps fold inward (see diagram above). The top flaps have square corners to optimize the opening when properly folded. The final opening should be a square.

③ Place the sampler over the threat, wait 1 minute, then measure with AP4C / AP4C⁺ up to 30 seconds.

④ If no detection is achieved after the 30 second sampling period, wait an additional 3 minutes and resample.
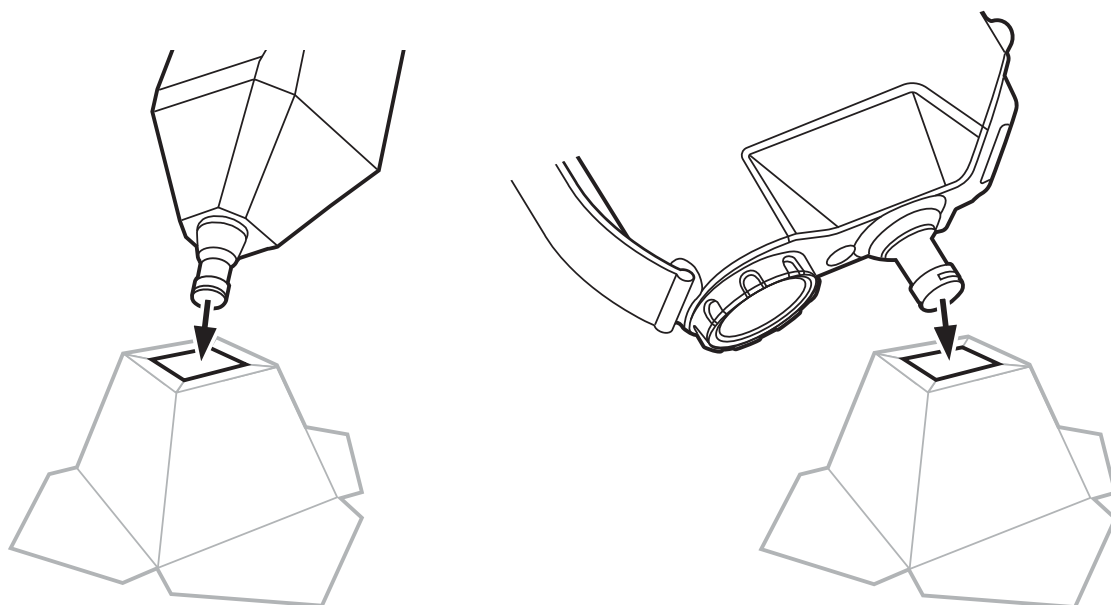
NOTES:
- The depth of the sampler is optimized for the AP4C nozzle tip to reach approximately 2 mm above the surface to be sampled thereby capturing heavier than air gases.
- The total volume of the sampler is optimized to allow for the entire volume to be sampled using a 30 second sampling time.

⑤ Dispose of the headspace sampler safely following its use (disposable).

WHAT IS HEADSPACE SAMPLING?

Headspace sampling is an analysis technique used to evaluate the volatile component above a liquid or solid sample. The liquid or solid sample is placed within a sealed container to minimize the loss of any volatile components. The sample is allowed to come to equilibrium where the volatile components move to the gas phase and the non-volatile components stay within the solid or liquid phase. A sample is then taken of the gas phase portion of the sealed container.

Vapor + Air

Liquid
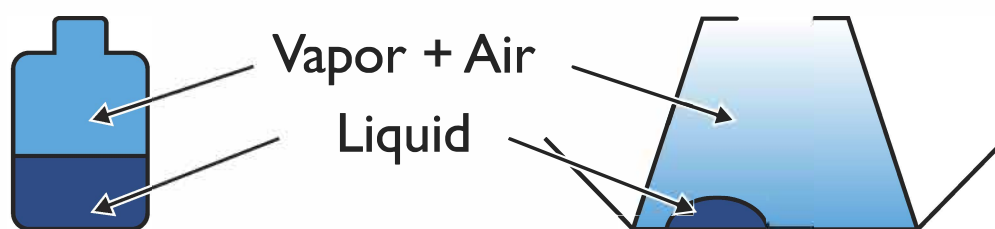
WHY SAMPLE THE "HEADSPACE"?

Operationally, gases represent the highest risk to emergency response personnel because they can quickly fill the space in 3-dimensions, effectively surrounding the operator. Unfortunately, many gases are not visible, especially at lower concentrations. The AP4C/AP4C⁺ should be used with the gas interface to directly sample gases.

Liquids are generally not as high of a risk to the responder as they take the shape of the container that they are in. The risk increases when the liquid is no longer within its intended containment vessel and can flow. Liquids generally move in 2 dimensions, defined by their containment or the surface upon which they lie.

As temperature and pressure conditions change, many liquids can produce vapors which can easily be mistaken for gases as they also move freely in the 3-dimensional space. Vapors represent a risk to the operator like that of gases and should be treated accordingly.

For solids and liquids which do not present vapors, the S4PE/S4PF sampler should be used to enhance temperature to create a vapor directly into the AP4C/AP4C⁺ using the solid/liquid interface.

HOW DO YOU SAMPLE THE HEADSPACE?

To sample a vapor forming above a liquid, it is necessary to first contain the vapor. Without containment of the vapor, it will diffuse into the space around and move like a gas. The containment can be done by placing the liquid in a vial and covering it, or in the case presented here, by placing a container over the sample to allow for vapor to build up within the space above the liquid. By creating a finite space for the vapor to expand into, the concentration is maximized.