MARKES international

QUI-1165
Version 1
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VOC-Mole™ soil probe

Instruction for use

Product Reference:

P-CP001 VOC-Mole cap assembly, pk 1

1. Introduction

The VOC-Mole is a robust, high-quality stainless-steel assembly that provides an economical way to screen volatile organic compounds (VOCs) in contaminated land, or along fuel pipelines, enabling in situ sampling directly at the soil gas source.

As a versatile tool the VOC-Mole allows you to quantitatively sample VOCs onto a sorbent tube by either passive or pumped sampling.

There are three probe lengths available that can be used in soil and areas of rock or concrete. There are also special versions for use in marshy and sandy ground.

For cost-effective and rapid screening of large areas of land, multiple VOC-Moles can be easily arranged in a grid pattern laid out across the site of interest.

The VOC-Mole comprises two components:

- VOC-Mole body
- VOC-Mole cap assembly

The following tools may also be required, but are not supplied with the VOC-Mole:

- Brass impact former, for driving soil probes into the ground (P-FORMR)
- A hammer, to insert the probe assembly into the ground
- CapLok tool (C-CPLOK)
- Conditioned sorbent tubes
- Sampling pump, if carrying out pumped sampling
- ¼” Union, to connect the VOC-Mole cap to a pump
- Diffusion cap (C-DF010 or C-DF100)

1.1 Important Safety Warnings

Make sure you follow the precautionary notices presented in this manual. Safety and other special notices appear in boxes and include the following.

WARNING This is the general warning safety symbol and safety alert word to prevent actions that could cause personal injury.

CAUTION Highlights actions that may cause product damage. We use it to highlight information necessary to prevent damage to hardware, software, invalid test results, or to information that is critical for optimal system performance.

NOTES Emphasises important information about a specific task.

2. Preparation

2.1 Cleaning

Shortly before use, the components of the VOC-Mole should be cleaned and dried.

Recommended procedure:

VOC-Mole cap:

[1] Remove O-ring

[2] Rinse the cap twice with freshly distilled water

[3] Rinse with a suitable solvent and wipe with a lint-free cloth

[4] Leave to air-dry

NOTES Check the O-ring for signs of deterioration or damage. O-rings can be cleaned by placing into a vacuum oven. This O-ring is readily replaced by the user.

VOC-Mole body:

[1] Clean thoroughly with water to remove residual debris on the inside and outside of the VOC-Mole.

NOTES Ensure to pay attention to the holes on the VOC-Mole body.

[2] Rinse with a suitable solvent and wipe clean

[3] Leave to air-dry

If the VOC-Mole is not being used immediately, store in a clean, dry environment.

3. Using the VOC-Mole

CAUTION Care should be taken whilst inserting the VOC-Mole into the ground with the hammer. Personal protective equipment is advised; safety goggles, steel cap toe boots and heavy duty gloves.

NOTES Care should be taken to ensure there are no utility pipes or cables near the soil surface in the sampling location.

NOTES For hard ground such as rock or concrete a predrilled hole may be required. The VOC-Mole can also be placed into existing boreholes.

3.1 Passive sampling

3.2 Recommended procedure

[1] At the investigation site push the VOC-Mole assembly into the ground, place the brass impact former onto the top and use a hammer to drive the VOC-Mole into the surface until all holes are covered – be sure to leave about 5 cm above ground.

Step [1]
inserting VOC-Mole into ground

[2] Once in position, remove the brass impact former and replace with the VOC-Mole cap before leaving to equilibrate with the soil gas.

Step [2]
VOC-Mole cap attached

[3] After reaching equilibrium, remove the VOC-Mole cap for tube insertion.

[4] Using the CapLok tool, remove the storage cap from the non-sampling end of the conditioned sorbent tube.

[5] Once uncapped, place the non-sampling end of the conditioned sorbent tube into the VOC-Mole cap and tighten; ensure it is finger-tight and then quarter turn using the CapLok tool. To ensure tightness, grip the tube and attempt to pull gently to ensure it does not slide out.

[6] Remove the remaining storage cap from the sorbent tube and place a diffusion cap onto the sampling end.

[7] Push the VOC-Mole cap into the VOC-Mole body ready for sampling. Ensure there is a tight seal.

[8] Mark or record the location of the VOC-Mole and sorbent tube ID to ease identification at the end of the sampling event.

NOTES Typically the VOC-Mole is left for 24 hours for the analytes to diffuse onto the sorbent bed. This process is more rapid when undertaking pumped sampling; grab sampling can even reduce sampling times down to seconds.

[9] Once the sampling period has passed, remove the VOC-Mole cap and extract the sorbent tube. Remove the diffusion cap and seal the sorbent tube with long-term storage caps using the CapLok™ tool – this will secure the sample for short-term and long-term storage.

[10] The tube is now ready for analysis.

NOTES The VOC-Mole can be left *in-situ* for subsequent sampling or removed for storage.

3.3 Pumped sampling

[1] At the investigation site push the VOC-Mole into the ground, place the brass impact former onto the top and use a hammer to drive the VOC-Mole into the surface until all holes are covered – be sure to leave about 5 cm above ground.

[2] Once in position, remove the brass impact former and replace with the VOC-Mole cap before leaving to equilibrate with the soil gas.

[3] After reaching equilibrium, remove the VOC-Mole cap for tube insertion.

[4] Using the CapLok tool, remove the storage cap from the non-sampling end of the conditioned sorbent tube.

[5] Once uncapped, place the non-sampling end of the conditioned sorbent tube into the VOC-Mole cap and tighten; ensure it is finger-tight and then quarter turn using the CapLok tool. To ensure tightness, grip the tube and attempt to pull gently to ensure it does not slide out.

[6] Remove the remaining storage cap from the sorbent tube, and push the VOC-Mole cap into the VOC-Mole body.

[7] Remove the brass plug from the VOC-Mole cap and connect the pump ready for sampling. You will need a ¼" union/fitting to connect the pump to the VOC-mole cap.

NOTES For active sampling you will need to calibrate your pump before use. Markes recommend the C-FLMTR flowmeter for calibration of the C-LFP-01 low flow sampling pump in constant flow mode.

[8] Mark or record the location of the VOC-Mole and sorbent tube ID to ease identification at the end of the sampling event.

[9] Once the sampling period has passed, remove the VOC-Mole cap and extract the sorbent tube. Seal the sorbent tube with long-term storage caps using the CapLok tool – this will secure the sample for short-term and long-term storage.

[10] The tube is now ready for analysis.

NOTES The VOC-Mole can be left *in-situ* for subsequent sampling or removed for storage.

4. Storage

The VOC-Mole should be cleaned before storage and kept in a clean/dry environment.

It is recommended to re-clean after storage, before use.

5. Specifications

Part Number	Length (mm)	Description	Circumference (mm)
P-00001	295 mm	VOC-Mole assembly, pk 1	105.24 mm
P-00010	295mm	VOC-Mole assembly, pk 10	105.24 mm
P-00020	445 mm	VOC-Mole assembly, pk 10	105.24 mm
P-00030	895 mm	VOC-Mole assembly, pk 10	105.24 mm
P-00040	895 mm	VOC-Mole assembly, for use in marshy ground, pk 10	105.24 mm
P-00050	895 mm	VOC-Mole assembly, for use in sandy ground, pk 10	105.24 mm

6. Spares and accessories

Part Number	Description
P-FORMR	Brass impact former
P-CP001	VOC-Mole cap assembly, pk 1
P-CP010	VOC-Mole cap assembly, pk 10
P-CP020	O-ring, VOC-Mole cap assembly, 23 mm × 3 mm i.d., pk 20

7. Contact details

For technical support, please contact your supplier in the first instance. If they are unable to resolve your query, please contact Markes International's service department:

E: support@markes.com
T: +44 (0)1443 230935
W: www.markes.com

For an instructional product video, please visit:
http://chem.markes.com/VOC-Mole

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