## Diveable Chemical and Biological Sampling Kit

QuickSilver Analytics
Edgewood Chemical Biological Center
AMTI
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#### Background

- Cooperative Research and Development Agreement (CRADA) between ECBC and QuickSilver
   January 2000 – present
- ECBC designs and tests to ISO 9001:2000
- ECBC retains design control
- QS manufactures under ISO 9000
- Continue this arrangement for this effort
- Evidence quality kits





#### Diveable CB Sampling Kit Requirements

- -Waterproof
- -Submersible up to 3 ATMs
- -Neutral buoyancy of 5lbs negative or positive pressure
- -Compact
- -Contains all tools and PPE needed for taking and transporting 6 forensically sound chemical and/or biological samples



# Changes From the Standard Model QSA 102 CBRE Sampling Kit

- Dual use for chemical and biological sampling
- Teflon® versus glass sample containers
- Submersible bag for transport of kit and samples
- Pre-assembly and ease of use
- Over pack bags versus jars
- Waste disposal







## Submersible C/B Sampling Kit Capabilities

- Liquid samples
- Solid samples
- Wipes samples
- Biological samples
- Record keeping

- PPE
- Detection
- Sample transport
- Waste Disposal
- Decontamination





## Inventory for Sampling Kit

- Over pack bags, WMD, Mylar, ALOKSAK
- > 15mL Teflon® Vial, pre-labeled, shrink-wrapped
- Scoops, Stainless Steel
- > 10mL Teflon® Syringe
- > 5mL Teflon® Pipette
- Scoop, Stainless Steel, Narrow
- Wipe Extension Tool
- Telescoping Pen
- > PBS, 25mL
- Gauze Pad
- Grease Pencil
- Water, 10mL
- M8/pH Paper on a stick
- Waste Bags, 6 mil plastic and Mylar®
- Laminated Inventory & Record Keeping Log
- Teflon® Tubing Assembly (needle, tubing weight and tubing (3') pre-assembled)

- Alcohol Swab
- Mylar Bag
- Apron Coat
- Drop Cloth
- Scalpel
- Kim Towel
- > Parafilm®
- Bleach Pack
- Dacron® Swab
- > Sharpie
- Pipette Bulb
- Nitrile Gloves

#### **Quality System**

ISO

\*9001:2000 Registered
ISO/IEC 17025 Accredited

Organizational Changes Currently in Progress to Enhance Quality Capability





Sample analysis, preparation of analytical data, and development of analytical methods in support of the U.S. Government chemical, biological and material testing in support of other customers; Design and fabrication of mobile systems that are fully integrated for science, risk assessment, engineering controls and human factors for both chemical and biological operations; education and consulting services to other laboratories and organizations.

## Barometric Pressure Testing – Dive Bag and Sampling Tool

Sampling tools

large Aloksak 🔻

one of four outer dive bags:

Utility

Gas Mask

**Platypus** 

Vacuum Sealed Mylar

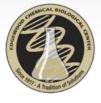
- Pressure testing in fresh water and salt water





# Barometric Pressure Testing – Dive Bag and Sampling Tool Results

- -All of the outer bags showed evidence of leakage except for the Mylar bag
- -The inner Aloksak did not leak, preventing water damage to the tools
- -Parafilm strips hard to separate





### Barometric Pressure Testing – Sample vials and Simulants

- Sampling tools used to collect GloGerm in 5ml and 15ml sampling vials
- -Outside of vials parafilmed
- -Sample vials

Individual Aloksak bags 🗨

Large Aloksak bag

Large Ziploc bag

-Pressure testing in fresh water and salt water





# Barometric Pressure Testing – Sample vials and Simulants Results

- -5ml vials leaked individual Aloksak bag able to contain leak
- -Outer Ziploc bag leaked





## Barometric Pressure Testing – Repeat Sample Vial Testing

- Sampling and pressure testing method repeated with the following modifications:

15ml vials used only

Individual WMD bags in place of small Aloksak bags

Two Aloksak bags used in place of one Aloksak and one Ziploc bag as the outer packaging

-Pressure testing in fresh water and salt water



# Barometric Pressure Testing – Repeat Sample Vial Testing Results

- -15ml vials did not leak
- -Outer Aloksak bags did not leak





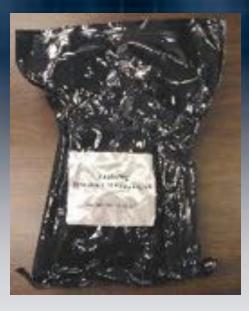
## Submersible Sampling Kit Components







## Final Submersible Sampling Kit



Mylar Vacuum Sealed CB Sampling Kit Weight: 2.6 lbs

Dimensions: 13 x 7 x 3"



DUI Gas Mask Bag for transport of samples with C-O-C form outside the bag







The Diveable CB Sampling Kit allows for the effective collection and transport of forensically sound chemical and/or biological samples through harsh marine conditions

#### **Notable Features of Kit:**

- Vacuum sealed Mylar Bag containing sterile kit tools
- 15ml Sample vials allows for adequate sample size
- Sample vials individually packaged in WMD bags for transport to laboratory
- Final outer packaging of vials consists of several layers of protection for ensuring the safety of the operator and maintaining the integrity of the sample

#### Diveable C/B Sampling Kit Team

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