Hach Homeland Security Technologies

See Inside!

- *NEW!* GuardianBlue® Early Warning System is Safety Act Certified by the U.S. Department of Homeland Security! *See page 492.*

- GuardianBlue® Water Distribution Monitoring Panel is certified and designated as an approved security product by the U.S. Department of Homeland Security! *See page 498.*

…and Much More!

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GUARDIANBLUE®

The first and only early warning system for drinking water certified and designated by the U.S. Department of Homeland Security.

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Safety Act Certified
U.S. Department of Homeland Security

NEW!

The GuardianBlue Early Warning System

The certification and designation by the U.S. Department of Homeland Security means GuardianBlue is approved as a security product and offers municipalities and their contractors litigation protection under the SAFETY Act.

The innovative GuardianBlue system uses patented technology to detect, alert and classify potentially harmful contaminants that can be intentionally or accidentally added into the distribution system.

While GuardianBlue's benefits to the security of the distribution system are undeniable, the system can also detect, alert, classify and LEARN operational events, such as caustic overfeeds, roadwork, and pipebursts—improving your insight into the quality of the water within the distribution system.

The Complete System includes:

- *GuardianBlue Agent Library (housed within the GuardianBlue Event Monitor)*
- *GuardianBlue Event Monitor*
- *GuardianBlue Water Panel (continuously measures pH, chlorine, turbidity, conductivity, temperature, and pressure with EPA methods)*
- *GuardianBlue TOC Analyzer*
- *Auto-Sampler (optional)*
- *Purge Gas Generator for TOC Analyzer*
- *First month of reagents*
- *Calibration standards*
- *Manual*

For more information, call to request Literature #2573, or visit www.hachhst.com
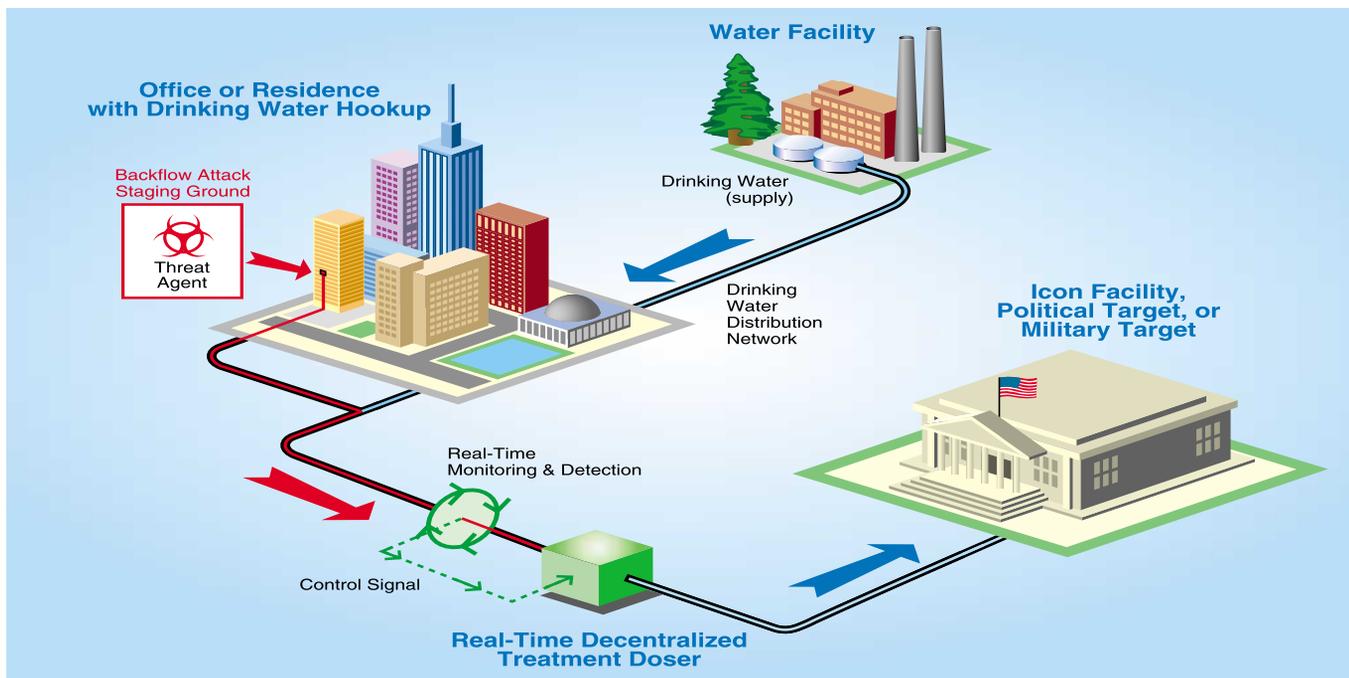
All systems are vulnerable to a backflow attack.

Security is a real threat to the nation's distribution systems. Several attempts to intentionally contaminate our nation's water supply have been documented. For examples, please read Dan Kroll's new book entitled, *Securing Our Water Supply: Protecting a Vulnerable Resource* (Prod. No. 6847600).
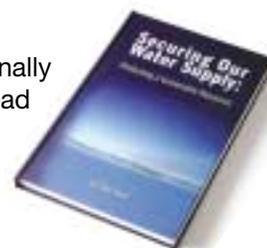
Hach recognizes this threat and has spent several years and thousands of hours of research developing a solution. GuardianBlue Early Warning System is the answer.

The GuardianBlue system analyzes 5 commonly measured parameters: pH, Conductivity, Turbidity, Chlorine, and TOC.

The system then develops a baseline for normal water quality for that site.

The GuardianBlue Event Monitor takes these 5 parameters, and through a highly sophisticated algorithm, it creates a dimensionless single signal vector called the trigger signal. Once a minute, the trigger signal is compared to the baseline, and if the user-set threshold is exceeded, a significant water quality deviation event has occurred.

The Event Monitor then compares the fingerprint of this event to its libraries, the Agent Library and the Plant Library.

The Agent Library has been created and developed by Hach Homeland Security Technologies through years of empirical data and testing. The Plant Library is developed on-site over time. These event fingerprints are learned and require the interpretation of operators who know the distribution system, so that the
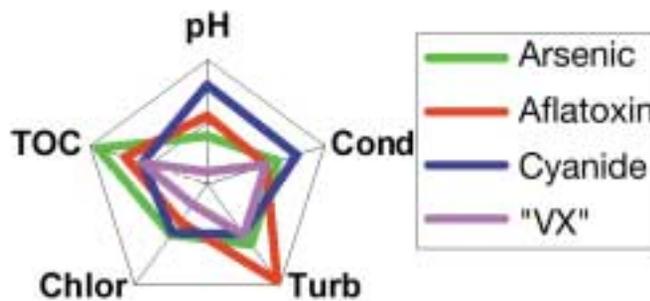
Graphic of an Agent Fingerprint.

fingerprints can be properly interpreted and named. If a match in either library is detected, the Event Monitor reports the results. If the optional automatic sampler is purchased, it pulls a sample for additional forensic analysis.

For a demonstration CD, please order Lit. #2601

Homeland Security Technologies

GuardianBlue = Water Security.

The GuardianBlue system has over 300,000 hours of real-world customer use. Extensive testing by Hach Company, the U.S. Army, U.S. Army Corp of Engineers and U.S. EPA ETV study have been performed. Testing at Edgewood Chemical Biological Center (ECBC), and the Army Corps of Engineer's Construction Engineering Research Laboratory (CERL) were conducted using live warfare agents.

The following Event Monitor screen shots show the classification process of the threat agent.

Normal water quality. Sensor data is steady and stable, creating a trigger signal that is also steady and stable.

A water quality deviation is detected, and the fingerprint of this event is matched to a fingerprint within the Agent Library, causing the Agent Alarm annunciator to flash red.

A closer look at the trigger signal graph will determine the length of time and possible magnitude of the event. The individual sensor readings can be seen on this screen as well.


The Agent fingerprint is classified as Dichlorvos or Dicrotophos or Methomyl with the greatest probability being Dichlorvos, and the automatic sampler has pulled a sample for forensic analysis.

For a demonstration CD, please order Lit. #2601

HACH®
Be Right™

800-604-3493
Outside the United States, call 970-669-3050

GuardianBlue® Early Warning System

## Detect changes before your customers do.

Ensure the health of your distribution system—build a distribution monitoring network for maximum surveillance capability.

- *Detect cross connection in real time*
- *Detect contamination events—intentional or accidental*
- *Stay alert to quality degradation due to water age*
- *Identify degradation in water quality due to biofouling*
- *Locate and monitor dead ends and low flow areas of the system*
- *Detect corrosion by-products, improve corrosion control*

- *Alert operators and managers to undesirable changes in water quality*
- *Reduce labor costs associated with time and travel to perform grab sampling*
- *Troubleshoot distribution system issues remotely*
- *Identify trends and adjust operation parameters more efficiently*
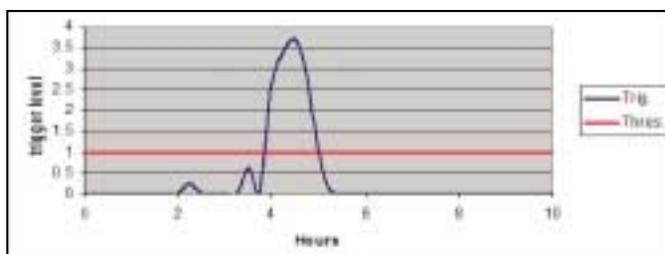
Caustic Overfeed Event

This event occurred when a plant experienced an operational problem that resulted in the feed of excess caustic. This affected pH and conductivity of the water, causing the Event Monitor to alarm. Operators named the event, and the Event Monitor learned and stored it in the Plant Library, so that a recurrence of the event can be identified.
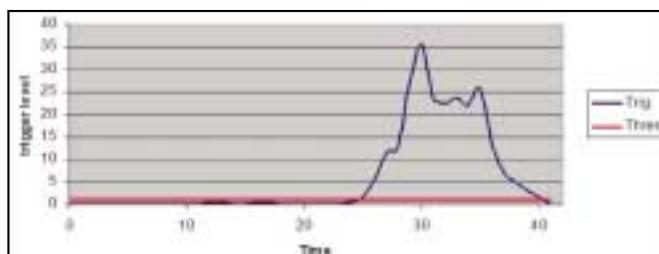
Roadwork Event

Road work near a distribution line dislodged biomass and other particulate matter. This event illustrates the ability of the Event Monitor to detect and alarm on unanticipated events. This fingerprint for the materials adhering to the walls of the pipes in this location is automatically stored in the Plant Library.
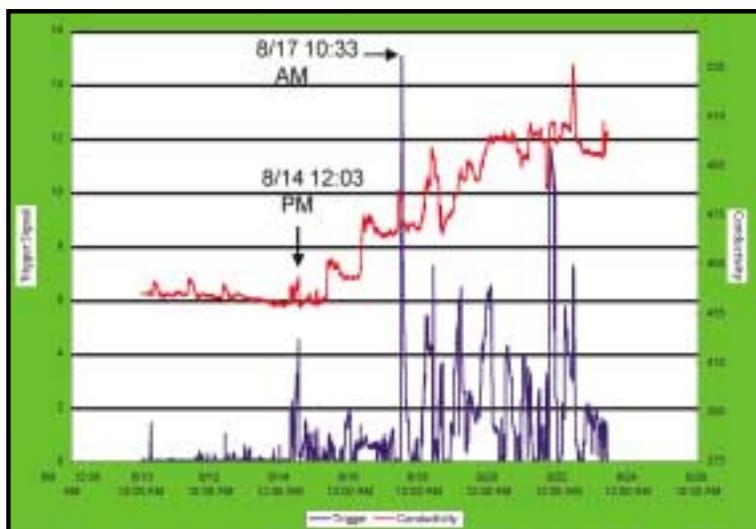
Pipeburst Event

This graph depicts a 36-inch main break. GuardianBlue was 2 miles upstream and started to see significant deviations in water quality almost 3 full days before the catastrophic pipe break occurred.

GuardianBlue® Event Monitor

The brains behind GuardianBlue.

- *Detects, alerts, and classifies threat contaminant and operational events*
- *Alarm when water quality deviates from baseline, whether its a known or unknown event*
- *Easily communicates with your SCADA system for centralized surveillance*
- *Trigger signal shows current deviation from water quality baseline, real-time*
- *View trigger signal and all parameter measurements from the main screen*
- *Touch screen interface for fast and easy system navigation*
- *Patented technology*
- *Real-time, on-line analysis of sensor data*

The Event Monitor contains Hach's patented water security algorithms and is the brains behind GuardianBlue Early Warning System. It integrates multiple sensor outputs from GuardianBlue's Water Panel and TOC Analyzer. Every 60 seconds, the system's patented algorithm analyzes deviations in five water quality parameters and uses the measurements to calculate a site's water quality baseline. The system alarms when the trigger signal exceeds a user-set threshold, indicating a water quality deviation from the system's normal operating baseline parameters.

Agent Library—Detects Intentional Contamination

The Event Monitor is equipped with a SAFETY Act designated and certified Agent Library which contains fingerprints of a wide variety of threat contaminants, ranging from cyanide and anthrax to arsenic and pesticides. The Agent Library provides the Event Monitor with the ability to classify contaminants that are nearly impossible to identify using current water quality monitoring techniques.

Municipalities will be able to update their Agent Library with new fingerprints through a subscription service when they are approved and released by Hach HST, allowing water utilities to take advantage of the latest research and development.

Plant Library—"Learns" Water Quality Events

The patented Event Monitor Trigger System identifies deviations in water quality due to operational fluctuations and calculates a fingerprint of each system event which is then catalogued in the monitor's "Plant Library." Operators can label event fingerprints for simplified identification should the event recur. With its demonstrated ability to "learn" specific system dynamics, the Event Monitor promises to become an invaluable tool for water utilities looking to quickly detect system events, lower system maintenance costs, and streamline plant operations, all while improving water quality and customer satisfaction.

For a demonstration CD, please order Lit. #2601

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Homeland Security Technologies

INPUT FIVE PARAMETER SIGNALS

Baseline Data

- Turb
- pH
- Cond
- Chlorine
- TOC

ANALYZE

Software

OUTPUT TRIGGER SIGNAL

Trigger Signal of Event

- Alarm
- Name
- Statistics

LEARN

Event Fingerprint

pH   Cond   Turb   TOC   Chlorine
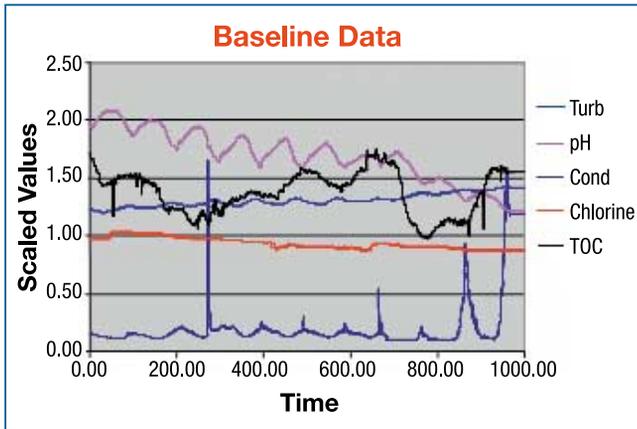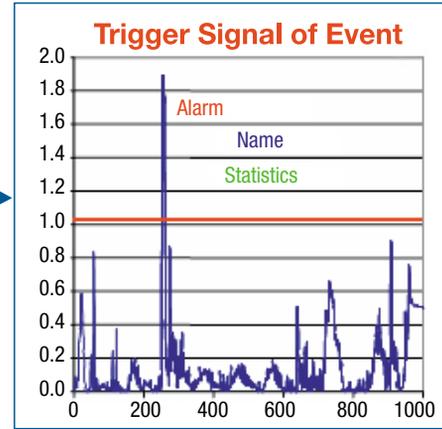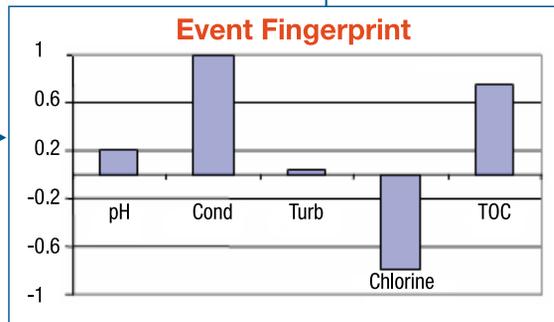
PLANT EVENT LIBRARY

Prod. No.	Description
6960600	**GuardianBlue Event Monitor**
6960000	**GuardianBlue Agent Library**, perpetual license
6960010	**GuardianBlue Agent Library**, annual license
6960200	**GuardianBlue Agent Library**, optional subscription service (for 2nd year for perpetual license holders)

ACCESSORIES

120161	Free-Standing Rack, wheeled

COMPLETE CARE PACKAGES

FSPGuardianB12	Monthly service visit
FSPGuardianB4	Quarterly service visit

For GuardianBlue Water Distribution Monitoring Instrumentation, see Water Panel pages 498-499, Automatic Sampler page 502, and On-line TOC Analyzer pages 500-501. For the WDMPsc as a stand-alone instrument, please see pages 420-421.

For more information, call to request Literature #2477, or visit www.hachhst.com

Specifications*

Alarms
Trigger Signal Alarm, High/Low Parameter Alarms, Frozen Parameter Alarm, Sensor Off-line Alarm; Agent Alarm; Plant Alarm; Missing Sensor; Invalid Data

Power Requirements
115 Vac, 100 W

Operating Temperature
5 to 40°C

Storage Temperature
-20 to 65°C

Humidity
95% at 40°C max

Environmental
Industrial grade, splashproof, designed to IP62

Communications
RS-485 MODBUS®

Dimensions
18" high x 20" wide x 15.5" deep (46 x 51 x 39 cm)

Weight
65 lbs. (29 kg)

Enclosure Material
316 Stainless steel

Mounting
Wall mount or rack mount

Display
15" touch screen

Certification
Listed to UL 1010 by ETS

Instrumentation
Interfaces with Hach WDM Panel or Hach PipeSonde In-Pipe Probe; astroTOC UV On-line TOC Analyzer; Hach Sigma Portable, Refrigerated, or All-Weather Autosamplers

Subject to change without notice.

GuardianBlue® Water Panel

The backbone behind GuardianBlue.

- *The right tool to establish your distribution system's water quality baseline*
- *Field-proven instruments you can count on*
- *Multi-parameter on-line panel includes pH, conductivity, chlorine (free or total) and turbidity*
- *Single sample inlet, outlet, and power hook-ups for ready-to-install convenience*

Know the Health of Your Water Distribution System

The initial step in knowing the health of your water distribution system is taking system vitals to establish a normal baseline at critical nodes, storage reservoirs, booster stations, pump stations, and other key monitoring points. The Water Distribution Monitoring Panel monitors the right combination of "indicator" parameters chosen by industry experts and recommended by the USEPA. In combination with the Hach Event Monitor™ Trigger System, you can now detect deviations from the baseline.

Instruments You Can Count On, Each Ranked Top in Category

Reliability is critical for continuous, uninterrupted surveillance of your distribution system. Each instrument in the Water Distribution Monitoring Panel utilizes proven technology and provides readings with little or no time lag. All data is logged to the network controller and sent to the Event Monitor and SCADA or other remote locations.

What's on each WDMPsc and why.

Hach HST scientists chose commonly tested parameters and robust instrumentation.

Chlorine- CL17 Chlorine Analyzer

Every 2.5 minutes the instrument obtains a sample, applies a DPD colorimetric method based on an approved USEPA method, and gives either a free or total chlorine reading, depending on the reagent in use at the time. You want adequate chlorine residuals to provide a first defense against microorganism contamination, yet excess chlorine can form DBPs in the network.

Turbidity- 1720E Turbidimeter

Continuously flowing sample enters the turbidimeter body and flows through a bubble trap designed to vent any entrained air bubbles from the sample stream. Turbidity is measured by directing a beam of light from the sensor assembly into the sample in the turbidimeter body and measuring the scatter light at 90 degrees with a photocell. The amount of light scattered is proportional to the amount of turbidity in the sample. Corrosion products and biogrowth can elevate the turbidity level in the distribution system above that of the plant effluent. The "E" uses USEPA approved method 180.1.

pH and Conductivity Probes from Hach/GLI

A patented differential pH sensor provides information on the acid/base nature of the water. A two-electrode conductivity sensor measures the total ionic concentration in the water.

Temperature

Temperature is measured to ensure the probes are measuring correctly and for other generic water quality information.

Sample Pressure

The sample pressure is measured to ensure that the sample going to the panel is within the specified range.

Calibration Shelf

Be Right™

Specifications*

Hach Distribution Monitoring Panel

sc1000 CONTROLLER

Dimensions
22 x 51.5"

SAMPLE REQUIREMENTS

Sample Inlet
1/2" OD Tube Connection

Sample Flow
400-600 mL/min

Sample Pressure
20 - 125 psig

Sample Operating Temperature
5 to 40ºC

Waste/Drain
3/4" NPT Hose Barb Connection

Waste/Drain Pressure
ambient, free flowing

Sampler Connection
1/4" NPT on inlet manifold

ELECTRICAL REQUIREMENTS

Line Voltage
115 Vac / 60 Hz

Power Consumption
90 VA maximum for Cl17; 30 VA for others

Digital Output
RS 485 MODBUS

Hach CL17 Chlorine Analyzer

Range
0 to 5 mg/L free or total residual chlorine

Accuracy
±5% or 0.035 mg/L as Cl_2, whichever is greater

Precision
±5% or 0.005 mg/L as Cl_2, whichever is greater

Minimum Detection Limit
0.035 mg/L

Hach 1720E Turbidimeter

Range
0.01-100 Nephelometric Turbidity Units (NTU)

Accuracy
±2% of reading or ±0.015 NTU (whichever is greater) from 0 to 40 NTU; ±5% of reading from 40 to 100 NTU

Displayed Resolution
0.0001 NTU up to 9.9999 NTU; 0.001 NTU from 10.000 to 99.999 NTU

Repeatability
Better than ±1.0% of reading or ±0.002 NTU, whichever is greater

Sample Flow Required
200 to 750 mL/minute (3.1 to 11.9 gal/hour)

Hach On-line pH Monitor

Range
0-14 pH

Sensitivity
Less than 0.005 pH

Stability
0.03 pH per 24 hours, non-cumulative

Hach On-line Conductivity Monitor

Range
0-2000 µS/cm

Accuracy
±0.01 % of reading

Stability
0.05 % of span per 24 hours, non-cumulative

Repeatability
0.1% of span or better

Temperature
20 to 200ºC

Pressure Sensor (Gems)

Range
0 - 150 psi

Subject to change without notice.

Hach's Water Distribution Monitoring Panels are shipped fully tested on a panel for wall mounting with a start-up kit and manual. The start-up kit includes reagents, and calibration standards for the CL17, 1720E, pH, and conductivity instruments. All panels include three flow meters, one Y-strainer, one pressure sensor, and one sample pressure regulator with gauge.

Prod. No.	Description
6846000	**GuardianBlue Water Panel**
6856900	GuardianBlue Monthly Reagent Set (Free Chlorine and TOC Reagent)
6857100	GuardianBlue Monthly Reagent Set (Total Chlorine and TOC Reagent)
6857300	GuardianBlue Quarterly Reagent Set

ACCESSORIES

6846600	Pressure Regulator Brings sample pressure down to 125 psi where the panel can safely use it, upward limit of 300 psi.
6846700	sc 1000 Controller Attachment Plate Allows sc1000 controller to be attached to the WDMP sc wheeled rack.
6844600	WDMP sc Mounting Rack, Wheeled
6840000	Probe Plug (extra)

COMPLETE CARE PACKAGES

FSPGuardianB12	Monthly service visit
FSPGuardianB4	Quarterly service visit

For more information, call to request Literature #2566 or #2573, or visit www.hachhst.com

Sensor Manifold

GuardianBlue® TOC Analyzer

The GuardianBlue On-line Total Organic Carbon Analyzer increases system sensitivity to organic chemicals in the distribution system.

- *Greatly enhances the detection and classification capabilities of GuardianBlue Early Warning System*

- *When combined with the Water Panel, the TOC Analyzer exponentially increases the system's sensitivity to organic chemicals, creating one of the industry's most unique and innovative early warning systems. Total organic carbon is a crucial part of the fingerprint structure.*

- *Combines chemical and ultraviolet oxidation techniques in a low-temperature reactor to deliver direct TOC measurements*

- *Uses a multi-staged UV oxidation reactor and a chemically impervious non-dispersive infrared (NDIR) CO_2 detector system, assuring full compliance with Standard Methods 5310 C and EPA method 415.1*

One of Hach HST's most sophisticated water quality sensors

In the first analysis step, the sample is mixed with acid, converting the total inorganic carbon (TIC) into CO_2. The TIC sparger removes all the CO_2 from the sample solution. Subsequently, the TIC-free sample is mixed with sodium persulfate and routed through the UV reactor, oxidizing the TOC into CO_2.

The gas/liquid mixture is transported by the carrier gas into the gas-liquid separator (GLS), where the sample gas is separated and diverted into the NDIR detector for the direct, interference-free CO_2 measurement. The resulting CO_2 concentration measurement is directly proportional to the original TOC concentration found in the sample. The front panel displays the TOC concentration in mg/L.

Includes one-month's supply of reagents, 2 UV lamps, view window, drain, and reagent level indicators.

Prod. No.	Description
6960300	**GuardianBlue TOC Analyzer**
6856900	GuardianBlue Monthly Reagent Set (Free Chlorine and TOC Reagent)
6857100	GuardianBlue Monthly Reagent Set (Total Chlorine and TOC Reagent)
6857300	GuardianBlue Quarterly Reagent Set (TOC Reagent only)

ACCESSORIES

4300-0006	Purge Gas Generator with compressor, 110V
120161	Free Standing Rack, wheeled

COMPLETE CARE PACKAGES

FSPGuardianB12	Monthly service visit
FSPGuardianB4	Quarterly service visit

Specifications*

Range
0-25 mg/L

Accuracy
±2% of full scale at 25ºC

Repeatability
±2% of reading at 25ºC

Minimum Detection Limit
≤0.015 mg/L for 0-5 mg/L

Response Time
T90 ≤8 min.

Serial Communication
Multi-function RS-232 or RS-485 serial port (MODBUS®, CSV)

Mounting
Wall mount or optional rack mount

*Subject to change without notice.

For more information, call to request Literature #2573, or visit www.hachhst.com

Keep your GuardianBlue Water Security System online and accurate with one of these service plans.

Start-up is included with every GuardianBlue Early Warning System. We also offer the optional Complete Care Packages called FSPGuardianB4 and FSPGuardianB12. With the FSPGuardianB4 plan, a Hach service professional visits your site on a quarterly basis and will assist you with upkeeping your GuardianBlue system. With this plan you will still need to replace the monthly reagents used by the instruments. The FSPGuardianB12 plan provides monthly site visits, and we take care of virtually everything.

Complete Care Package	Start-Up*	FSPGuardianB4	FSPGuardianB12
System Commissioning/ Start-Up	■	■	■
System Training for up to 5 personnel	■	■	■
Parts included for preventative maintenance, including maintenance kit for 3 month, 6 month, 9 month, 1 year		■	■
Field Service priority access direct to Technical Consulting Services, just call the exclusive toll free number.	■	■	■
Annual Check-up	■	■	■
Emergency Repair @ Standard Rate	■		
Priority Emergency Repair @ no additional cost		■	■
Quarterly Reagent Replacement		■	
Quarterly Preventative Maintenance		■	
Monthly Reagent Replacement for instruments			■
Monthly Preventative Maintenance			■
Monthly Instrument/System Verification			■
Biannual audit by HST Development Team			■
Optional Reagent Reordering Plan Reagents must be ordered separately, and are not included with Complete Care Packages.	■	■	■

Included in GB system price.

GuardianBlue Early Warning System requires the use of reagents on a monthly and quarterly basis. These product numbers were designed to minimize any of the hassles associates with obtaining reagents and/or maintenance parts. Just ask your customer service representative to do a "future ship date" and tell the representative your desired ship date.

Choose either of these two Product Numbers depending on the reagent you use with your CL17 Chlorine Analyzer.

Prod. No.	Description
6856900	**GuardianBlue Monthly Reagent Set, Free Chlorine** All monthly reagents required to run the GuardianBlue system, using free chlorine for the CL17
6857100	**GuardianBlue Monthly Reagent Set, Total Chlorine** All monthly reagents required to run the GuardianBlue system, using total chlorine for the CL17

Choose this Product Number for the convenient delivery of your quarterly reagent and calibration standards.

Prod. No.	Description
6857300	**GuardianBlue Quarterly Reagent Set (TOC Reagent only)** All quarterly reagents and calibrations standards required to run the GuardianBlue system as per the specifications listed in manual.

Prod. No.	Description

MAINTENANCE KITS

Prod. No.	Description
6856600	**GuardianBlue 3 Month Maintenance Kit** Replacement parts for all components of the GuardianBlue system after 3 months and 9 months of operation
6856700	**GuardianBlue 6 Month Maintenance Kit** Replacement parts for all components of the GuardianBlue system after 6 months of operation
6964300	**GuardianBlue 1 Year Maintenance Kit** Replacement parts for all components for the GuardianBlue system after 1 year of operation
6961700	**Sampler Maintenance Kit** Replacement parts for the Automatic Sampler after 1 year of operation

SPARE PARTS KIT (Designed for service professionals)

Prod. No.	Description
6857700	**GuardianBlue Spare Parts Kit for TOC** and the Other Instruments If you are planning on servicing your own system, this may come in very handy. It contains various miscellaneous screws, filters, fuses, o-rings and the resample block.

Homeland Security Technologies

GuardianBlue® Verification Kit

An easy, portable way to verify your system is working properly at any time.

The GuardianBlue Verification Kit monitors:

- *pH*
- *Conductivity*
- *Arsenic*
- *Chlorine*
- *Turbidity*
- *Alkalinity*
- *Toxicity*
- *Hardness (total and calcium)*
- *Cyanide*
- *Radiation*

This convenient kit was designed to verify proper functionality of the GuardianBlue system anytime. Additional tests are included for emergency response purposes. What do you do when the GuardianBlue Event Monitor triggers and tells you there is an agent? Before you initiate your emergency response plan, use this kit and Hach's Technical Consulting Services to verify your instruments are working properly. Also use this kit to verify instrumentation accuracy after an event is recorded.

Prod. No.	Description
6857000	**GuardianBlue Verification Kit**
2510600	Replacement Reagent Set

Automatic Sampler

When the Event Monitor triggers, it instantly signals the Automatic Sampler to capture a real-time water sample.

- *Rugged All-Weather Refrigerated Sampler is recommended for use with GuardianBlue*
- *Capture a real-time sample of the water causing an alarm*
- *Use the sample for additional forensic analysis*

The Automatic Sampler is an Important Complement of the GuardianBlue Early Warning System.

When the Event Monitor triggers on significant water quality deviations, it instantly signals the Sampler to capture a real-time water sample. This allows water utilities to conduct additional forensic analysis and testing on actual water samples. The GuardianBlue Early Warning System uses the Sigma 900 Max All-Weather Refrigerated Sampler to ensure maximum flexibility and dependability and to allow water utilities to meet all sampling requirements.

Prod. No.	Description
007184	**Automatic Sampler**
	Recommended for use with GuardianBlue
6961700	Sampler Maintenance Kit (1 year)
FSP900Max	Field Service for 900Max Sampler

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Outside the United States, call 970-669-3050

Direct in-pipe installation in distribution system with redundant safety features.

- *Seven water quality parameters in one in-pipe probe*
- *Enhance monitoring with the Event Monitor™ Trigger System to identify excursions from baseline water quality*
- *Flexible system—sample port allows simple connection of an on-line TOC analyzer and automatic sampler*
- *Patented technology*

The PipeSonde in-pipe probe is designed to provide a monitoring solution in places where larger instrumentation is not practical—such as major interconnections, trunk mains, air vaults, river intakes, remote storage tanks and reservoirs. The PipeSonde in-pipe probe may be installed directly into an 8-inch or larger, pressurized pipe through an industry standard two-inch corporation stop. Redundant safety mechanisms and patented design ensure protection of personnel during installation and removal. Sensors are water- and debris-tight and warranted to 300 psig for reliable operation with minimal maintenance.

Connect the PipeSonde probe to the Event Monitor Trigger System and monitor deviations from your baseline water quality, helping you identify excursions from normal water quality. The PipeSonde probe allows you to expand water distribution system monitoring to every key point in your network. Installation in high velocity pipes is not recommended.

Homeland Security Technologies

Performance

	Range	Accuracy	Resolution
pH	0 to 14 units	±0.2 units	0.01 units
ORP	-999 to 999 mV	±20 mV	1 mV
Specific Conductance	0 to 100 mS/cm	±0.001 mS/cm or ±1% of reading	4 digits
Dissolved Oxygen (LDO)	0 to 20 mg/L	±0.1 mg/L	0.01 mg/L
Turbidity	0 to 100 NTU	±5% of range	0.1 NTU
Line Pressure	0 to 300 psig	±0.5 psi	0.1 psi
Temperature	-5 to 50°C (23 to 122°F)	±0.10°C	0.01°C

Prod. No.
PS5BASE
PipeSonde In-Pipe Probe
Sensors include: pH, Conductivity, Dissolved Oxygen (LDO), Turbidity, ORP, Line Pressure, and Temperature. Includes data/power cable, AC adapter, Hydras 3 software, maintenance kits, and manual

ACCESSORIES

007196
Hach Surveyor® 4a
Hand-held accessory used to quickly calibrate the PipeSonde probe, record and graphically display parameters and automatically store or upload more than 375,000 measurements

007185
PipeSonde data & power cable 10' in length with standard RS-232 connector and AC power adapter

014610
Flow Cell for PipeSonde

007666
Turbidity calibration cup for use with StablCal or Formazin

5870000
Chlorine Pocket Colorimeter II for Free and Total Chlorine
(range 0.02 - 2.00 / 0.1 - 8.00 mg/L)

Prod. No.
FSPPS5
Field Service Partnership for 1 year

CORPORATION STOPS KITS AND SEALS
(2-inch corporation stop with a Teflon® seal is required for installation)
007175
Corporation stop kit, NPT, Ford, and Teflon® seal
007176
Corporation stop kit, CC, Ford, and Teflon® seal
Corporation stop Teflon® seals available separately.

SAMPLER OPTIONS
007182
900 Max automatic sampler, portable 24 x 1 L bottles with interface hardware and regulator
007183
900 Max automatic sampler, refrigerated 24 x 1 L bottles with interface hardware and regulator
007184
900 Max automatic sampler, All-weather refrigerated 24 x 1 L bottles with interface hardware and regulator

TOC OPTION
Contact your regional sales representative for more information.

Specifications*

Material
316 stainless steel body and insertion device, Teflon® corporation stop seal, Nitrile® o-rings

Data Communications
MODBUS®, RS-232, SDI-12, RS-485 or RS-422 with adapter

Power Requirements
120 Vac or external 12 Vdc power supplied via data cable, 12 Vdc battery (solar panel option available)

Operating Temperature
-5 to 50°C (23 to 122°F)

Sampler or TOC Hook-ups
Stainless steel sample port, 1/4" NPT

Pressure Rating
300 psig

Dimensions
540.6 mm (21.3") height above corporation stop
181 mm (7.2") diameter without handles
604 mm (23.8") diameter with handles
42.8 mm (1.7") diameter of inserted probe
140 mm (5.5") insertion depth of probe

Weight
30 lbs., without corporation stop

Subject to change without notice.

For more information, call to request Literature #2473, or visit www.hachhst.com

Eclox™ Rapid Response Water Test Kit

Rapid results for seven tests in one easy-to-use kit.

- *Rapid detection of contaminated water*
- *Reliable indicator of relative water quality*
- *Used in a wide range of environmental conditions*
- *Software provided for data download*
- *Sensitive to heavy metals, poisons and chemical warfare agents*

Eclox Water Test Kit includes tests for:

1. Chemiluminescence toxicity screening (Eclox)
2. Arsenic
3. Pesticide/Nerve Agents
4. Chlorine
5. Color
6. Total Dissolved Solids (TDS)
7. pH

The Hach Eclox Water Test Kit packages the Eclox chemiluminescence toxicity test developed by Severn Trent Services, along with screening tests for pesticide/nerve agents and field-proven Hach quality tests. This field kit is designed to serve in various applications as a first-line tool in general water quality assessment. As such, it provides economical, qualitative indication of water quality that quickly helps operators, technicians, and first responders determine if action is required.

The technique used by the Eclox luminometer is the same as that validated by the USEPA Environmental Technology Verification (ETV) program to yield reliable detection of heavy metals, poisons, and chemical warfare agents on-site. It is the preferred solution for municipalities seeking instrumental toxicity assessment and military specifications.

For U.S. domestic customers only.

Specifications*

Dimensions
520 x 450 x 215 mm
(20.5 x 17.5 x 8.5 in)

Weight
9 kg (20 lbs.) fully loaded

Temperature
Tested from -20 to 55 °C
(-4 to 131ºF)

Quality Standards
Manufactured by ISO9000 certified company

Military Standards
Def Stan 08-41 Chemical hardness, Def Stan 07-55 Robustness, Def Stan 00-35 Environmental conditions

Batteries (for luminometer)
Alkaline cell, lithium cell, AA

Battery Life (for luminometer)
AA batteries- more than 250 tests, Other batteries- more than 2000 tests

Compliance
CE Marked for compliance with European standards

Data Logging (for luminometer)
Up to 60 test results recorded in full detail

Communications (for luminometer)
RS232 cable provided for results download to computer

Software
Database software provided to record and analyze results

Tests
Arsenic, Chemiluminescence toxicity, Chlorine-free and total, Color, APHA Platinum-Cobalt, Nerve agents, Pesticides, pH, Total Dissolved Solids (Conductivity)

Shelf Life
Two years

Storage Conditions
Ambient temperature

*Subject to change without notice.

Prod. No.	Description
2886800	**Eclox Water Test Kit**, includes consumables, reagents, luminometer, batteries, apparatus, case, and manual
2886900	Eclox Reagent Set includes 50 chemiluminescence tests, 10 pesticide/nerve agent tests, 50 each free and total chlorine tests, 10 each pH 4.01 and 7.00 Singlet solutions, 100 EZ arsenic tests
2887500	Eclox Chemiluminescence Reagent Set 50 tests
2887600	Pesticide/Nerve Agent Test Strips, 10 tests
1407799	DPD Free Chlorine, 100 tests
1407699	DPD Total Chlorine, 100 tests
2769920	Singlet Solution Package, pH 4.01 and 7.00, pk/10 each
2307542	NaCl, Color, and TDS Standards, 100 mL each
2823200	EZ Arsenic Reagent set, 100 tests

For more information, call to request Literature #2404, or visit www.hachhst.com

800-604-3493
Outside the United States, call 970-669-3050

Ready to respond to water quality emergencies.

• *Based on the EPA's Response Protocol Toolbox*

• *Contains field-proven key tests recommended by the EPA*

• *Portable laboratory in one package*

• *Includes portable Radiation Monitor*

Meets Government Agency Recommendations

The Hach Emergency Response Tool Kit is closely modeled after the EPA's December 2003 recommendations for a core field test kit for drinking water site characterization. It includes a radiation monitor for first-level field safety screening, as well as the equipment, reagents, spare parts, and documentation needed to perform the rapid chlorine, cyanide, and pH tests recommended by the agency for characterizing hazards at a particular site.

Utilities will find this organized kit, with water quality tests that are easy to learn and use, an efficient and effective way to meet EPA-recommended preparedness.

Prod. No.	Description
2884100	**Emergency Response Tool Kit**
TEST KIT REFILLS	
1407799	DPD Free Chlorine reagent, 100 individual 5-mL samples
2438200	Cyanide reagent, 100 tests

pH BUFFERING SOLUTION

Refills for the pH buffer solution include 20 singlet packets of buffer solution.

2770020	pH 4.01 buffer solution
2770120	pH 7.00 buffer solution
2770220	pH 10.01 buffer solution

For more information, call to request Literature #2402, or visit www.hachhst.com

Specifications*

Emergency Response Tool Kit
Dimensions: 44 x 26 x 22 cm
(17.5 x 10.25 x 8.5 in.)

CN-66F Free Chlorine Test Kit
DPD, Color Disc
Range: 0 to 3.5 mg/L with
accuracy of ±0.1mg/L

CYN-3 Cyanide Test Kit
Pyridine-Pyrazolone, Color Disc
Range: 0 to 0.3 mg/L range with
accuracy of ±0.1mg/L

Pocket Pal pH Tester
Range: 0.0 to 14.0 with accuracy
of ±0.1 pH at 20ºC
Operating Temperature:
0 to 50ºC (32 to 122ºF)

Pocket Pal Conductivity Tester
Range: 10 to 1990 µS/cm with
accuracy of ±2% of reading at 25ºC
calibration and 25ºC sample. ±10%
of temperature compensated µS/cm
readings over 0 to 50ºC range.
Operating Temperature: 0 to 50ºC
(32 to 122ºF)

Inspector Alert Nuclear Radiation Monitor
(See Lit. # 2490 for detailed specifications.)
Range: 0.001 to 100.0mR/hr.
0 to 350,000 CPM, 1 to 9,999,000
total counts, 0.01 to 1,000 µSv/hr,
0 to 5,000 CPS with accuracy of
15% up to 50 mR/hr; 20% up to
100 mR/hr
Operating Temperature:
-20 to 50ºC (-4 to 122ºF)

Subject to change without notice.

ToxTrak™ Toxicity Test Kit

Evaluate water quality in emergency situations.

- *Confirm the integrity of drinking water supplies—at the source—during treatment or in the distribution system*
- *Protect wastewater treatment plant biomass*
- *Protect receiving waters from toxic substances*
- *Evaluate the toxicity of chemicals used in the lab or the plant*
- *Provides results within forty-five minutes*

ToxTrak™ Toxicity Test Kit contains:

25 tests including comparator, reusable viewing tubes, 12 Total Bacterial Count Medium tubes, 50 ToxTrak Reagent Pillows, ToxTrak Accelerator Solution, transfer pipets, and apparatus.

Colorimetric Method

Toxicity-the inhibitory effects of a waste stream on bacterial growth-can be monitored using methods such as direct growth, specific enzyme activity, bioluminescence, and respiration.

These methods usually require lengthy incubation times, centrifugation, solvent extraction, laborious colony-counting procedures, and expensive equipment. The ToxTrak™ Toxicity Test uses a colorimetric method to determine toxicity with a spectrophotometer or color disc comparator. The colorimetric method is quick and inexpensive, making it practical to monitor more frequently and with larger numbers of samples.

Economical Alternative to Bioassays

ToxTrak is an inexpensive alternative that has results comparable to respirometric methods measuring dissolved oxygen consumption. Use ToxTrak to screen influent and effluent and/or process waters from wastewater treatment plants, pulp and paper facilities, power plants, chemical production facilities, petroleum manufacturing, and metal plating facilities.

Prod. No.	Description
2597700	**ToxTrak Toxicity Test Kit**
2597200	ToxTrak Reagent Set (for use with photometers)
2597800	ToxTrak Culture Set
2560766	ToxTrak Reagent Powder Pillows; 2 pillows per test / 50 per pkg
2560836	ToxTrak Accelerator Solution, 4 drops per test / 15 mL SCDB
2277700	Total Bacteria Count Broth Tubes; 1 per test / 12 per pkg
27242	Water, deionized; varies per test 100 mL
2281400	Incubator, Dri-Bath, 12-well, 115 Vac

Prod. No.	Description
1451537	Pipet, Volumetric, Class A, 5 mL
1970010	TenSette Pipet, 1.0 to 10.0 mL
1970001	TenSette Pipet, 0.1 to 1.0 mL
2232512	Pipets, sterile transfer, disposable, 15 per pkg
1465100	Pipet Filler, safety bulb
2185696	Pipet tips for 19700-01, 50 per pkg
2199796	Pipet tips for 19700-10, 50 per pkg

For more information, call to request Literature #1595, or visit www.hachhst.com

Radalert™ 100 and Inspector Alert™ Nuclear Radiation Monitors

- *Portable radiation monitors for lab and field use*
- *Measures alpha, beta, gamma and x-radiation*
- *Easy-to-read digital display*
- *Capable of detecting radiation leaks and contamination*
- *Monitor personal exposure, changes in background radiation and an area or perimeter*
- *Safety-first calibration feature eliminates personal exposure*
- *Total/Timer feature allows timed reading for precise measurement of low-level contamination*
- *Halogen-quenched, Geiger Mueller tube detector with mica window*
- *Handheld, battery operated*

Homeland Security Technologies

Prod. No.	Description
2884000	**Radalert™ 100** Nuclear Radiation Monitor
2884200	**Inspector Alert™** Nuclear Radiation Monitor

Specifications*

RADALERT™ 100 NUCLEAR RADIATION MONITOR

Operating Range
mR/hr: .001-110
CPM: 0-350,000
µSv/hr: .01-1,100 CPS: 0-3,500
Total: 0-9,999,000 counts
Timer: Up to 40 hours

Sensitivity
1000 cpm/mR/hr referenced to Cs-137

Accuracy
±10% typical; ±15% max. (mR/hr & mSv/hr modes)

Alert
User-adjustable alert level to 50 mR/hr & 160,000 CPM

Audio
Beeper chirps for each count (can be muted)

Ports
Output: Stereo 3.5 mm jack sends counts to computers, data loggers, other CMOS-compatible devices, and headphones
Input: Mono 2.5 mm jack provides electronic calibration input

Power
One 9-volt alkaline battery; average battery life is 2160 hours at normal background, 625 hours at 1 mR/hr with beeper off

Options
Computer cable and software (IBM PC compatible)

INSPECTOR ALERT™ NUCLEAR RADIATION MONITOR

Operating Range
mR/hr: 0.001to 100.0
CPM: 0 to 350,000
Total: 1 to 9,999,000 counts
µSv/hr: 0.01 to 1,000
CPS: 0 to 5,000

Sensitivity
3500 CPM/mR/hr referenced to Cs-137

Accuracy
± 15% 0-50 mR/hr and 0-130,000 CPM;
± 20% 50-100 mR/hr and 130,000-350,000 CPM

Temperature Range
-20 to 50ºC (-4 to 122ºF)

Power
One 9-volt alkaline battery, 2,160 hours of average battery life

Timer & LED Count Light
Audio Beeper

*Subject to change without notice.

IT TAKES MORE THAN PHYSICAL BARRIERS TO GUARD YOUR CITY'S DRINKING WATER.

Protect your water distribution network with GuardianBlue.®

Most municipalities have improved security at their water treatment facilities with barbed wire, security guards and cameras. Unfortunately, many don't realize their water distribution network is still wide open to attack. Fortunately, there's GuardianBlue,® the only early warning system capable of detecting, alerting and classifying threat contaminants before they pose a risk to your community. GuardianBlue is the only early warning system for drinking water certified by the Department of Homeland Security.

Don't wait until it's too late. Call and find out how GuardianBlue can protect your city's water distribution network today.

1-800-604-3493
www.hachHST.com

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