84195-1 4/16/2010 1of24

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

EPA United States Environmental Protection Agency **Office of Pesticide Programs**

APR 16 2010

FILE COPY

Jeff Jones
Agent for EnviroTower
Delta Analytical Corporation
12510 Prosperity Drive
Suite 160
Silver Spring, MD 20904

Subject: IOBIO™ Bacteria, Slime and Algae Control
EPA Registration No. 84195-1
Application Date: March 22, 2010
EPA Receipt Date: March 23, 2010

Dear Mr. Jones:

The following notification submitted in connection with registration under the provisions of PR Notice 98-10, Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) section 3(c)9 is acceptable.

Proposed Notification:

- Update container language of the Storage and Disposal statement per PR Notice 2007-4

Comments:

Based on a review of the material submitted, the following comments apply:

This application for notification to revise the storage and disposal language, as referenced above, is acceptable. A copy has been placed in your files for future reference.

Should you have any questions concerning this letter, please contact me at Henson.Wanda@epa.gov or call (703) 308-6345.

Sincerely,

Wanda Henson
Acting Product Manager (32)
Regulatory Management Branch II
Antimicrobials Division (7510P)

Please read instructions on reverse before completing form. Form Approved. OMB No. 2070-0060.

EPA United States Environmental Protection Agency Washington, DC 20460

☐ Registration ☐ Amendment X Other

OPP Identifier Number: **NOTIF**

Application for Pesticide - Section I

1. Company/Product Number **84195-1**

2. EPA Product Manager **Wanda Henson**

3. Proposed Classification ☐ None ☐ Restricted

4. Company/Product (Name) **EnviroTower, Inc. / IOBIO™ Bacteria, Slime and Algae Control**

PM# **32**

5. Name and Address of Applicant (*Include ZIP Code*)
EnviroTower, Inc.
c/o Delta Analytical Corp.
12510 Prosperity Drive, Suite 160
Silver Spring, MD 20904
Check if this is a new address

6. **Expedited Review.** In accordance with FIFRA Section 3(c)(3)(b)(i), my product is similar or identical in composition and labeling to:

EPA Reg. No._____

Product Name_____

Section - II

☐ Amendment - Explain below
☐ Resubmission in response to Agency letter dated_____
X Notification - Explain below.
☐ Final printed labels in response to Agency letter dated_____
☐ "Me Too" Application.
☐ Other - explain below.

Explanation: Use additional page(s) if necessary. (For section I and Section II.)

Notification per PR Notice 2007-4 to update the Storage and Disposal language.

Notification of label change per PR Notice 2007-4. This notification is consistent with the guidance in PR Notice 2007-4 and the requirements of EPA's regulations at 40 CFR 156.10. 156.140, 156.144, 156.146, and 156.156. No other changes have been made to the labeling or the Confidential Statement of Formula for this product. I understand that it is a violation of 18 U.S.C. Sec. 1001 to willfully make any false statement to EPA. I further understand that if the amended label is not consistent with the requirements of 40 CFR 156.10. 156.140, 156.144, 156.146, and 156.156, this product may be in violation of FIFRA and I may be subject to enforcement action and penalties under sections 12 and 14 of FIFRA.

Section - III

1. Material this Product will be Packaged in:

Child-Resistant Packaging ☐ Yes* ☐ No

** Certification must be submitted.*

Unit Packaging ☐ Yes ☐ No
If "Yes," Unit Package wgt. No. per container

Water Soluble Packaging ☐ Yes ☐ No
If "Yes," Unit Package wgt. No. per container

2. Type of Container ☐ Metal ☐ Plastic ☐ Glass ☐ Paper ☐ Other (Specify)_____

3. Location of Net Contents Information ☐ Label ☐ Container

4. Size(s) of Retail Container

5. Location of Label Direction ☐ On Label ☐ On Labeling accompanying product

6. Manner In Which Label Is Affixed to Product ☐ Lithograph ☐ Paper glued ☐ Stenciled ☐ Other _____

Section - IV

1. Contact Point *(Complete items directly below for identification of individual to be contacted, if necessary, to process this application.)*

Name	Title	Telephone No. (Include Area Code)
Jeff Jones	**Agent, EnviroTower, Inc.**	**301-680-7971**

Certification

I certify that the statements I have made on this form and all attachments thereto are true, accurate and complete. I acknowledge that any kind of knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

6. Date Application Received **(Stamped)**

2. Signature Jeff Jones

3. Title **Agent, EnviroTower, Inc.**

4. Typed Name **Jeff Jones**

5. Date **March 22, 2010**

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3 of 24

DELTA
ANALYTICAL
CORPORATION

March 22, 2010

Document Processing Desk (NOTIF)
Office of Pesticide Programs (7504P)
Environmental Protection Agency
One Potomac Yard
2777 S. Crystal Drive, Room S-4900
Arlington, VA 22202

Attn: Wanda Henson, PM 32

Re: Notification per PR Notice 2007-4 to update container language of the Storage and Disposal statement

Product: **IOBIO™ Bacteria, Slime and Algae Control**
EPA Reg. No. **84195-1**
Company: **EnviroTower, Inc.**

Dear Ms. Henson:

On behalf of EnviroTower, Inc., I am submitting a notification per PR Notice 2007-4 to update the Storage and Disposal section of the label for the product IOBIO™ Bacteria, Slime and Algae Control, EPA Reg. No. 84195-1. The revisions made are consistent with PR Notice 2007-4. No changes have been made to any other part of the label.

Enclosures
- EPA form 8570-1
- 1 copy of the label showing the revised Storage and Disposal statement

If you have any questions regarding this submission, please contact me at jjones@delta-ac.com or 301-680-7971.

Sincerely,

Jeff Jones
Agent, EnviroTower, Inc.

Enclosures

12510 Prosperity Drive Suite 160 Silver Spring, Maryland 20904
(301) 680-7971 fax (301) 680-7975 www.delta-ac.com

IOBIO™

Bacteria, Slime and Algae Control

IODINE CONTAINING CANISTER
KEEP OUT OF REACH OF CHILDREN

NOTIFICATION
Date Reviewed: 4/16/10
Reviewed By: W Henson

DANGER

FOR USE IN OPEN RECIRCULATING WATER SYSTEMS ASSOCIATED WITH COOLING TOWERS, EVAPORATIVE CONDENSERS, AND FLUID COOLERS

ACTIVE INGREDIENT

Iodine.....99.5%
OTHER INGREDIENTS..... 0.5%
TOTAL 100.0%

FIRST AID	
If in eyes	▪ Hold eye open & rinse slowly & gently with water for 15-20 minutes. ▪ Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. ▪ Call a Poison Control Center or doctor for treatment advice.
If on Skin or Clothing	▪ Take off contaminated clothing. ▪ Rinse skin immediately with plenty of water for 15-20 minutes. ▪ Call a Poison Control Center or doctor for treatment advice.
If Swallowed	▪ Call Poison Control Center or doctor immediately for treatment advice. ▪ Have person sip a glass of water if able to swallow. ▪ Do not induce vomiting unless told to do so by the Poison Control Center or doctor. ▪ Do not give anything by mouth to an unconscious person.
If Inhaled	▪ Move person to fresh air. ▪ If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. ▪ Call a Poison Control Center or doctor for further treatment advice.
Have the product container or label with you when calling a poison control center or doctor, or going for treatment.	
NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.	

EPA Reg. No. 84195-1
EPA Est. No. 080118-NY-001

Net Contents:
Manufactured for: EnviroTower Inc.
380 Adelaide St. West
Toronto, ON, Canada M5V 1R7

DO NOT REMOVE OR DEFACE THIS LABEL

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Corrosive. Causes irreversible eye damage and skin burns. May be fatal if swallowed or inhaled. Harmful if absorbed through the skin. Do not get in eyes, on skin or on clothing. Do not breathe vapors. Wear goggles or face shield, protective clothing and chemical resistant gloves when handling. Wash thoroughly with soap and water after handling and before eating or smoking. Remove contaminated clothing and wash before reuse.

ENVIRONMENTAL HAZARDS

This product is toxic to fish and aquatic organisms. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

PHYSICAL OR CHEMICAL HAZARDS

Do not store or ship in the presence of ammonia. This product will form explosive nitrogen iodides when contacted with liquid ammonia, aqueous ammonia solutions (such as household ammonia) or alkaline solutions of ammonia salts.

THIS CANISTER CONTAINS A COMMERCIAL GRADE OF PURE, ELEMENTAL IODINE. DO NOT DAMAGE OR IN ANY WAY ATTEMPT TO EMPTY CANISTER OF CONTENTS.

DIRECTIONS FOR USE

It is a violation of federal law to use this product in a manner inconsistent with its labeling.

The **IOBIO™** device aids in the control of bacteria, algae and slime in open recirculating cooling water systems that are used in conjunction with cooling towers, evaporative condensers and evaporated fluid coolers. The **IOBIO™** device automatically controls and continuously dispenses a precise and very low concentration of elemental iodine into the recirculating water.

DO NOT USE THIS PRODUCT WITH AIR WASHERS OR DIRECT EVAPORATIVE COOLERS USED FOR HUMAN COMFORT COOLING.

IOBIO™ is not affected by pH values, dissolved mineral levels, or temperatures commonly found in open recirculating water systems which cool air-conditioning and industrial processes. When correctly selected and applied, the **IOBIO™** canister requires replacement only once per year.

See the enclosed Installation, Operation and Maintenance manual for background information on the **IOBIO™** canister and instructions on installing and operating the product.

STORAGE AND DISPOSAL

Do not contaminate water, food or feed by storage or disposal.

Pesticide Storage: Keep canister tightly closed. Store in a dry place. Do not store in the presence of ammonia.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide or rinsate is a violation of federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

Container (Canister) Handling: Refillable container. Refill this container with iodine only. Do not reuse this container for any other purpose. Cleaning the container before final disposal is the responsibility of the person disposing of the container. Cleaning before refilling is the responsibility of the refiller. Ship the expended canister back to the manufacturer in the reusable carton that arrives with the replacement canister. See section on replacing canisters in Directions for Use booklet for instructions on changing canisters. DO NOT THROW EXPENDED IODINE CANISTERS IN THE TRASH.

[batch code]

IOBIO™ Bacteria, Slime and Algae Control

Installation, Operation and Maintenance Manual

April 2008

EnviroTower Inc.
380 Adelaide St. West
Toronto, ON M5V 1R7
Canada

Installation, Operation and Maintenance Manual

Table of Contents

GENERAL INFORMATION

DESCRIPTION

The IOBIO™ provides a simple and reliable means of controlling slime and algae often found in evaporative cooling systems. It is easy to use and requires little maintenance. By delivering very low concentrations of iodine, the IOBIO™ automatically controls unwanted microbiological contaminants in the open system. It is a simple, effective method of biological water treatment.

The information contained in this manual will enable the user to effectively install, operate, and maintain the IOBIO™. It is important to follow these instructions to obtain the design performance from the device.

The IOBIO™ is installed in the make-up water piping to the cooling tower, evaporative condenser, or evaporative fluid cooler. The IOBIO™ is constructed of two primary components, a permanent upper housing and a replaceable lower iodine canister. When properly selected, the iodine canister contains a quantity of elemental iodine designed to last a full operating season. Since the exact duty cycle will vary on each application, it is suggested the IOBIO™ be monitored during the first season of use, and a replacement canister size be ordered that best matches the desired replacement interval.

The IOBIO™ is compatible with both alkalinity and acidity, and the dissolved mineral levels and temperatures commonly found in open recirculating water systems which cool air-conditioning and industrial processes.

Additional water treatment may be required if corrosive and/or scaling conditions exist. The services of a competent water treatment specialist should be obtained for specific water treatment recommendation in these instances. Any corrosion and scale inhibitors used must be compatible with halogen biocides.

INSTALLATION INFORMATION

> ***It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.***

PARTS LIST

Package A: Installation Kit
Upper housing
Housing mounting bracket & housing mounting screws
Sheet metal screws
PVC pipe and fittings
Installation, Operation and Maintenance Manual

Package B: IOBIO™ Replacement Canister Package
Canister Wrench

If required use an Anti-Syphon Valve such as *Watts Regulator Company* Model 800M4FR or 800MQT

TOOLS AND MATERIALS REQUIRED FOR INSTALLATION

Drill and drill bits
Hand wrenches
Pipe thread dope or sealant
PVC solvent cleaner and pipe adhesive
Hack saw

Additional tools and materials as necessary to re-route and modify existing make-up water supply piping (copper, steel, or PVC).

PLUMBING CONSIDERATIONS

The table below indicates the recommended flows and pressures for the IOBIO™.

Canister Diameter (in)	Pressure Drop (psig)	Maximum Pressure (psig)	Maximum Flow (gpm)*
4	0.6	100	13
6	1.0	100	20

*Maximum continuous make-up water flow rate

The "maximum pressure" is the maximum allowable water pressure to which the IOBIO™ will be exposed when the cooling tower float valve (or electric level control solenoid valve) is closed and the make-up water flow is zero.

The "pressure drop" is the water pressure required to force the design water flow rate through the IOBIO™. This value is over and above the pressure required to force the design water flow rate through the float valve. If the optional anti-syphon valve is used, additional pressure is required. See instructions and specifications enclosed in the optional anti-syphon valve package.

It is recommended that the IOBIO™ be installed using the PVC pipe and fittings enclosed with this kit. It is recognized, however, that some local plumbing codes require the use of metallic piping.

Note: If metallic piping is used in lieu of PVC pipe, some corrosion of the metallic piping may occur near the IOBIO™. Such metallic piping should be inspected annually and replaced as required.

Plumbing codes require that potable water distribution systems be protected from contamination by non-potable water, such as evaporative cooling equipment water. Optional anti-syphon valve is available for this purpose, if required.

Under most circumstances, evaporative cooling equipment requires no mechanical isolation from the potable water supply because the make-up water valve (float-operated valve) discharge connection has been positioned at a height above the basin overflow that is more than the minimum required by most codes for an "air break".

When the IOBIO™ is installed in the make-up water piping, it must be mechanically isolated from the potable water system. The optional anti-syphon valve should be a "Pressure Vacuum Breaker" which meets the American Society of Sanitary Engineers (ASSE)-1020 specification and is approved for "high hazard" application by Building Officials & Code Administrators Int'l. Inc. (BOCA), International Association of Plumbing & Mechanical Officials (IAPMO), International Conference of Building Officials (ICBO), Southern Building Code Congress International (SBCCI), and the Canadian Standards Association (CSA). Consult the specification sheet enclosed with the anti-syphon valve for further information.

PLUMBING CONSIDERATIONS - CONTINUED

If the evaporative cooling equipment is already isolated from the potable water supply with a "Reduced Pressure Principle Backflow Preventer" (ASSE-1013), or a "Pressure Vacuum Breaker" (ASSE-1020), no further protection is needed. However, any existing apparatus should be tested in accordance with the manufacturer's specifications to ensure proper functioning.

Consult local plumbing codes to ensure installation compliance.

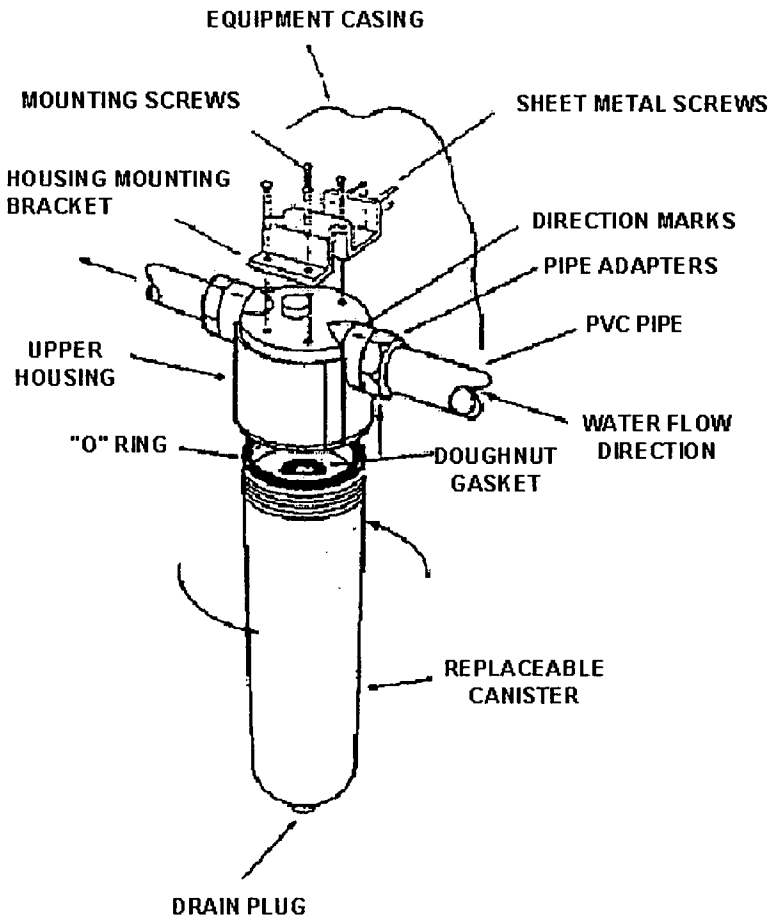

Figure 1

INSTALLATION INSTRUCTIONS

The IOBIO™ should be installed as close as possible to the make-up water connection of the evaporative cooling equipment and should be attached to the side of the evaporative cooling equipment. Do not install the device at a location remote from the immediate vicinity of the evaporative cooling equipment.

If the make-up water frequently contains sand or other particulates, a commercially available water filter should be installed upstream to protect the IOBIO™ and the optional anti-syphon valve (if used). An occasional particle of sand, smaller than .020 inch diameter, will not harm the IOBIO™, however, A CONTINUING FLOW OF SUCH PARTICLES WILL RENDER THE DEVICE INACTIVE AND MAY PREVENT THE ANTI-SYPHON VALVE FROM SEATING PROPERLY. A filter will not be needed with a normal potable water supply.

In the direction of make-up water flow, the major components should be installed in the following order:

- Service valve, if used (supplied by others)
- Water filter, if required (supplied by others)
- Water meter, if used (supplied by others)
- Anti-syphon valve (supplied by others)
- IOBIO™
- Cooling tower water level control (float valve or electrically actuated valve)

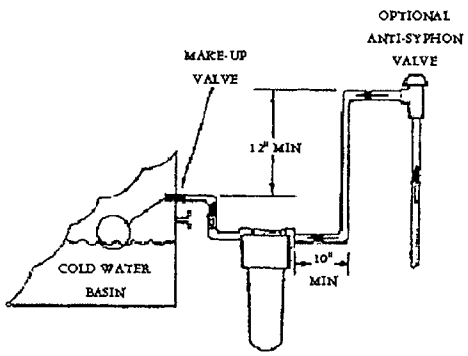

Figure 2A

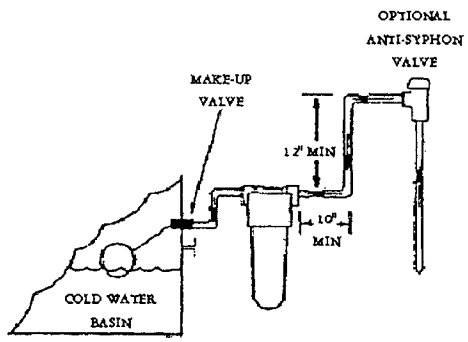

Figure 2B

INSTALLATION INSTRUCTIONS - CONTINUED

Use the following instructions for installation of the IOBIO™.

1. **DANGER:** Turn off and lock-out the evaporative cooling equipment's pumps and fan motors before beginning to install the IOBIO™.

2. Turn off make-up water to evaporative cooling equipment.

3. Identify a convenient location for the IOBIO™ on the side of the evaporative cooling equipment near the make-up water inlet connection. Allow 2 inches of clearance beneath the iodine canister to permit removal and replacement.

4. Locate a spot to mount the anti-syphon valve (if required), allowing a minimum valve elevation of 12 inches from the connections into the evaporative cooling equipment (Figure 2A) or the top of the IOBIO™ housing (Figure 2B), whichever is higher. The vertical dimensions are required for correct functioning of the anti-syphon valve. Whether or not the ant-syphon valve is installed a minimum, straight run of pipe upstream of the IOBIO™ must be provided for correct functioning of the device.

5. For retrofit installations, remove the existing piping from the evaporative cooling equipment water level control mechanism.

6. Drill four one-quarter inch holes in the evaporative cooling equipment casing using the mounting brackets as templates. Attach mounting brackets with sheet metal screws provided (Figure 1). If more than one IOBIO™ is required, locate the additional devices as close as possible to one another. Multiple devices are to be piped in parallel with piping arranged to provide equal flow resistance through each device (Figure 3).

7. Attach the upper housing of the IOBIO™ to its bracket with screws provided. Observe the flow direction markings on water connections.

8. Open the ball valves that are located at the inlet and outlet of the optional anti-syphon valve (if used).

9. Attach the anti-syphon valve (if used) to its mounting bracket using the plastic strap provided. Close the test connections.

INSTALLATION INSTRUCTIONS - CONTINUED

10. Piping from the anti-syphon valve (if used) to the IOBIO™ and from the device to the evaporative cooling equipment water level control mechanism (float valve or solenoid valve), must be plastic to minimize corrosion. Install the PVC pipe thread adapters, using pipe dope or sealant.

11. Cut, deburr, and install PVC pipe using joint cleaner and adhesive.

12. Modify existing make-up water piping to make connection to bottom inlet of anti-syphon valve, if used, or to adapt to the PVC piping upstream of the IOBIO™.

13. Remove the IOBIO™ canister from the canister package, and remove the plastic bag from around the canister. Following the instructions enclosed with the canister, remove the shipping cap and install the canister into the upper housing.

14. When an expended canister is being replaced, the shipping cap from the fresh canister is used to close the expended canister for shipment back to the manufacturer. On a new installation of the IOBIO™, the shipping cap should be rinsed under a faucet and then discarded.

DANGER:	Do not retain the shipping cap(s) for other uses. It is contaminated with iodine and can cause harm to humans and domestic animals.

15. Turn on make-up water to the evaporative cooling equipment and check for leaks.

16. In situations where the evaporative cooling equipment is operated in freezing weather, the canister and upper housing and adjoining piping should be wrapped with heat trace material and insulated.

Note:	Do not over-insulate! The canister is plastic which can be damaged by excessive heat. If the IOBIO™ is overheated to 250° F, the entire device must be replaced.

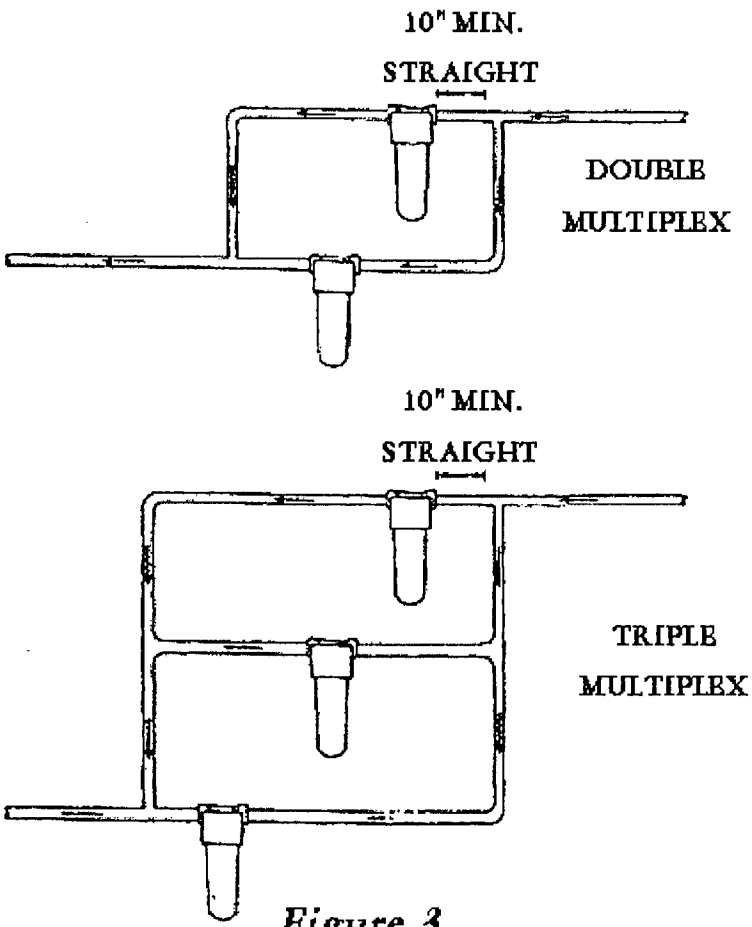
10" MIN.
STRAIGHT
DOUBLE
MULTIPLEX
10" MIN.
STRAIGHT
TRIPLE
MULTIPLEX

Figure 3

HEAT TRACING SELECTION PROCEDURES

SELECTION CONTANTS								
	INSULATION THICKNESS*							
MODEL	½"		1"		1 ½"		2"	
	AMBIENT TEMPERATURE							
	(0° F)	(-20° F)	(0° F)	(-20° F)	(0° F)	(-20° F)	(0° F)	(-20° F)
IB4 – 030	11	16	5	8	4	5	3	4
IB4 – 060	15	22	7	11	5	7	4	6
IB4 – 140	26	38	13	19	9	13	6	10
IB6 – 165	21	32	11	16	7	11	5	8
IB6 – 375	37	56	19	28	12	19	9	14

* *Insulation thickness based on closed cell neoprene.*

To select the proper amount of heat tracing divide the constant by watt density of heating cable to determine length of heating cable required.

EXAMPLE:

Given an IOBIO™ Model No. IB4-060 in an ambient temperature of 0°F with 4 watt/foot wire and ½" of insulation thickness, select the amount of heat tape required.

Constant = 15 W/FT = 4

Amount of tape required: $\frac{15W}{4\ W/FT}$ = 3.75 ft.

Therefore wrap the IOBIO™ with 3.75 ft. of heat tape.

NOTE: The use of low watt density, self regulating heating cable is recommended. Follow the heating cable manufacturer's instructions in all cases.

OPERATING AND MAINTENANCE INFORMATION

OPERATING INSTRUCTIONS

The IOBIO™ requires operator attention. The residual iodine concentration in the evaporative cooling equipment and recirculating water should be checked daily for several days following the initial installation of the IOBIO™ and following a canister replacement. Thereafter, the iodine concentration in the evaporative cooling equipment and recirculating water should be checked weekly during the operating season.

To measure the residual iodine concentration in the evaporative cooling equipment and recirculating water, use the test kit enclosed in the replacement canister package. Follow the instructions enclosed with the test kit. The residual iodine content in the water should be between 0.1 and 0.5 ppm.

The amount of iodine remaining in the canister can be determined by observing the black mass within the translucent canister. Opaque blue canisters are equipped with a sight glass to provide a visual indication when the iodine is nearing depletion. The operator should procure a replacement canister when the level of iodine beads is at the center of the sight glass on the opaque blue canister or when the black mass has diminished to 1 ½ inches from the bottom of the translucent canister.

NOTE: Initial use of the IOBIO™ may loosen existing biological material and carbonate deposits in the system, causing strainers to plug. The operator should be alert to such an occurrence so that remedial action can be taken to avert a system shut-down.

COLD WEATHER OPERATION

When the evaporative cooling equipment is secured for freezing weather, and after the make-up water to the evaporative cooling equipment is valved off, the plug at the bottom of the canister should be loosened to allow the water in the canister and adjacent piping to drain out.

The IOBIO™, including the canister, must be heat traced if operated in freezing weather. Refer to "Installation Instructions".

CANISTER REPLACEMENT INSTRUCTIONS

1. Turn off the make-up water to the evaporative cooling equipment. The ball valve at the outlet of the anti-syphon valve (optional) may be used for this purpose.

2. Remove any heat tracing and insulation from the expended canister, if necessary.

3. Remove drain plug from bottom of expended canister to drain canister and piping of water.

4. Remove the expended canister by unscrewing it from its upper housing. Use the plastic canister wrench supplied with the new canister. Place expended canister upside down over an open drain to empty any remaining water.

5. Remove the replacement IOBIO™ canister from its carton, and remove the resealable plastic bag.

6. In an open and well ventilated space, and while keeping face away and upwind of canister, *carefully* remove the shipping cap from the fresh canister. The canister is not under pressure, but a small amount of iodine vapor will be released when the canister is opened. Avoid breathing iodine vapors.

Do not discard the shipping cap. It is to be used to close expended canister for return mailing.

7. Observe upper face of canister, one-quarter inch thick doughnut shaped gasket should be in place around center tube.

8. Observe "O" ring at upper end of fresh canister. Ensure that it is well lubricated. If not, spray with silicone lubricant.

9. Install fresh canister by screwing it into the upper housing. Turn 4 inch diameter (translucent) canister clockwise until solid stop at end of thread is felt. Turn 6 inch diameter (opaque blue) canister clockwise until seal ring is firmly compressed. Use the canister wrench supplied with the original IOBIO™ kit.

10. Turn on the make-up water to the evaporative cooling equipment and check for leaks.

11. Replace the heat tracing and insulation on the device, if so equipped.

CANISTER DISPOSAL INSTRUCTIONS

DO NOT THROW EXPENDED CANISTERS IN THE TRASH. Ship the expended canister back to the manufacturer in the reusable carton that arrives with the replacement canister.

1. Reinstall plug at bottom of expended canister.
2. Install shipping cap onto expended canister.
3. Insert expended canister into plastic bag and reseal.
4. Insert bagged canister into mailing carton. Seal carton.
5. For proper disposal, return spent IOBIO™ canister to distributor or send back to:

EnviroTower Inc.
380 Adelaide St. West
Toronto, ON M5V 1R7 Canada

SYSTEM MICROBIOLOGICAL CONTROL DURING SHUT-DOWN

During extended shut-down of the evaporative cooling system, there are many situations where it is advisable to maintain biocidal control of the water system.

One example would be a water chilling system with the cooling tower mounted on the roof of a building and a chiller installed in a basement boiler room. In cool weather, the system would be shut down because the desired indoor environmental conditions can be maintained by circulating outdoor air.

The portion of the system of least concern for microbiological growth would be the cooling tower because of the cool temperature of the water in the tower. On the other hand, the chiller could be installed in a boiler room where the temperature might be as high as 80°F, an ideal condition for growth of microbiological foulants in the condenser tubes.

A simple solution for continuous microbiological control can be achieved by maintaining a very small residual of iodine throughout the cooling system. See Figure 4 below.

Tap into the warm water return riser to the cooling tower at a point that is below the shut down water level in the cooling tower by 6 inches to 12 inches. Install a hand valve and electric solenoid valve as shown, with the discharge of the solenoid valve directed to drain. Wire the solenoid valve to open when the system is shut down. Adjust the hand valve for a small flow rate, such as one quart per minute.

Monitor the iodine content of the discharge water and adjust the flow rate downward until only a trace of iodine can be measured. On extremely large systems, or badly fouled systems, the flow rate required will be higher than with small, clean systems.

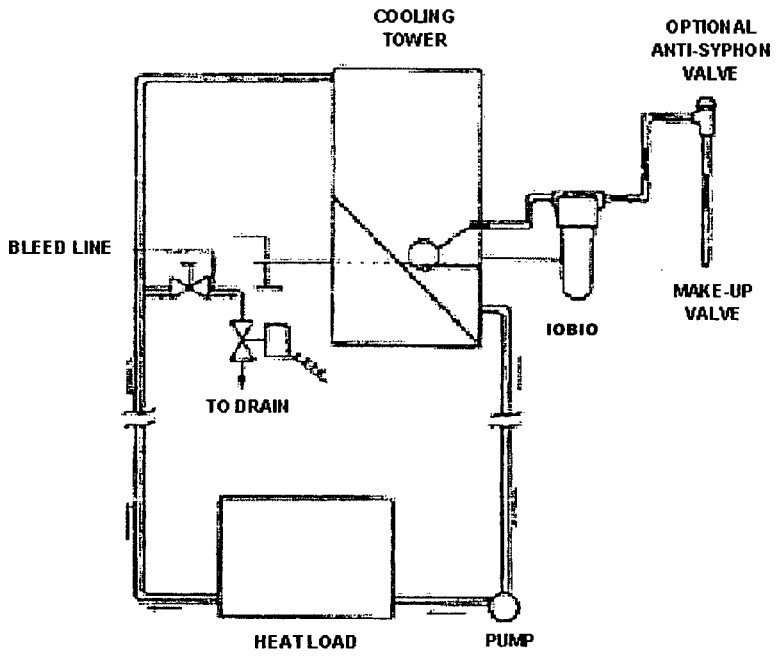
COOLING
TOWER
OPTIONAL
ANTI-SYPHON
VALVE
BLEED LINE
MAKE-UP
VALVE
IOBIO
TO DRAIN
HEATLOAD
PUMP

Figure 4

TROUBLE SHOOTING GUIDE

EXPERIENCED DIFFICULTY	POSSIBLE CAUSE	CORRECTIVE ACTION
High bacteria counts in recirculating water	Insufficient iodine residual	See TS - 1
	No iodine delivery	See TS – 2
Low operating iodine concentration in recirculating water	No thermal load	See TS - 1
	IOBIO™ not delivering iodine	See TS – 2
IOBIO™ not delivering iodine	No make-up water flow	See TS -1
	IOBIO™ canister plugged with suspended solids from make-up water. Bottom screen plugged.	See TS - 3
	IOBIO™ canister exhausted	See TS - 3
	IOBIO™ Venturi orifice plugged	See TS - 3
	IOBIO™ installed backwards	Check flow direction arrow at pipe connections on upper housing
	Doughnut gasket missing/damaged	See TS - 3
	IOBIO™ canister not screwed in snugly	See TS – 3
Excessive concentration of iodine in recirculating water	Water level control valve leaking at shut-down	Check level control valve leakage
	Blow-down valve stuck open, or blow-down operating with the system shutdown	Check blow-down with system inoperative
	Elemental iodine carried over into tower sump	Check top screen for damage. (See TS - 3)

TROUBLE SHOOTING GUIDE - CONTINUED

TS - 1 GENERAL

The IOBIO™ delivers iodine to the cooling system by way of the make-up water. The make-up water flow rate is an indirect indicator of the system's demand for biocidal control.

Nominally, the make-up water will contain 3.0 ppm of iodine after it has passed through the IOBIO™. Under normal operating conditions, this value will maintain a residual 0.3 ppm, nominally, in the recirculating water. An iodine residual in the rage of 0.1 to 0.5 ppm is acceptable.

On a new installation of the IOBIO™, especially on a cooling system that contains biofilms or slime, the design iodine residual will not be achieved immediately. Depending upon the water volume in the system, the residual will not be achieved for several days, in the best case, to several weeks, in the worst case. Further, if the thermal load on the system during this start-up stabilization process is erratic or very light, the process may never stabilize until a reasonable thermal load is placed on the system for several weeks. See recommendations in the section covering system microbiological control during shutdown for idle system protection.

If the cooling tower water level is controlled by an electric level sensor, the iodine residual in the recirculating water will not be a steady value. It will be high, 0.3 to 0.5 ppm, immediately after a fill cycle, and it will be low, from not measurable to 0.2 ppm, immediately before a fill cycle. This is satisfactory operation. The section covering system microbiological control during shutdown should be followed for situations where there will be extended time, i.e., one hour or more, between fill cycles with electric level control.

TS - 2 CHECK IODINE DELIVERY

Using an iodine test kit, measure the reaction due to chlorine in the water supplied to the cooling tower, upstream of the IOBIO™. Then manually open the cooling tower water level control valve for several seconds, long enough for water to flow the distance from the IOBIO™ to the cooling tower, and measure the reaction in a water sample taken from the discharge of the valve into the cooling tower.

There should be a very distinct difference in the color reactions of the two measurements. The water discharging from the cooling tower water level control valve should provide a deep mauve color reaction. This indicates normal operation of the IOBIO™.

TS - 3 IOBIO™ EXAMINATION

If trouble shooting steps point to failure of the IOBIO™ to add iodine into the make-up water, the following steps should be followed in the sequence indicated.

1. Valve off the make-up water to the IOBIO™. Remove the pipe plug from the bottom of the canister. Place a glass container under the canister to catch the drain water. Observe the color of the water which trickles from the canister. A tea color, or light coffee color is normal. If the water is clear, or nearly so, the iodine charge may be depleted. Refer to the operating instructions on how to determine when to replace expended canisters.

NOTE:	The water drained from the canister will stain but is harmless to the skin. It is 1/100th the concentration of tincture of iodine sold in pharmacies for disinfecting skin lacerations. Keep away from mouth and eyes. Follow precautions for use.

2. Loosen canister from upper housing by unscrewing canister one turn. This will allow air to enter canister top and will accelerate canister drainage. This process serves to flush any foreign particulate matter from canister which might have plugged the protective screens. Observe the quantity of particulates which settle to the bottom of the glass container. If the quantity of particulates is ¼ to ½ of a tea cup, it can then be assumed the canister was plugged. The canister can then be reinstalled, and a water filter must be installed to prevent reoccurrence of plugging. Refer to installation instructions.

3. After water has been drained from canister, remove canister from the upper housing. Observe the ¼ inch thick doughnut gasket. A clear indentation should be present on the upper face of the gasket corresponding to the sealing surface in the upper housing. If the indentation is not present the canister may not have been screwed into place snugly. If the gasket has been damaged, replace the doughnut gasket with the spare supplied.

4. Observe the upper face of the canister for loose particulate matter. Wash loose matter from the upper face of the canister with a hose.

   By looking upward into the upper housing, locate the small orifice in the venturi. Clean any obstructions from the orifice with a pencil point. Do not use a metallic tool, such as a drill bit to clear the orifice.

5. Inspect plastic screen on the upper face of the canister. It should be firmly in place, with no cracks or missing sections, to ensure that elemental iodine particles cannot escape from the canister.

6. Inspect canister "O" ring for damage. Replace, if necessary, with spare provided. Coat surface of "O" ring with silicone lubricant, and reinstall canister. Reinstall drain plug, using Teflon tape as sealant. Turn on make-up water to IOBIO™. Recheck for iodine delivery, as described in paragraph TS-2.