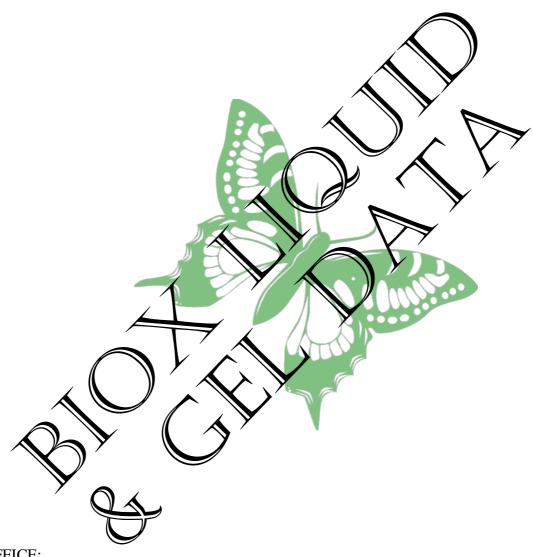
CLEANING SOLUTIONS COMBINING:
BIOX '02' IMMERSION FLUID
BIOX BIODEG
UTLRASONIC EQUIPMENT





### **HEAD OFFICE:**

BIOX Ltd,

The Granary

Yeo Lane

North Tawton

Devon

**EX20 2DD** 

UK

Tel: 01837 880135 Fax: 01837 880063

Email:bioxint@hotmail.com Web: www.Bioxint.com

ENVIRONMENT PRODUCTS AND PROCESSES

CLEANING SOLUTIONS COMBINING:
BIOX '02' IMMERSION FLUID
BIOX BIODEG
UTLRASONIC EQUIPMENT

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CLEANING SOLUTIONS COMBINING: BIOX '02' IMMERSION FLUID BIOX BIODEG
UTLRASONIC EQUIPMENT



#### **IDENTIFICATION:**

BIOX IS A BIOLOGICAL LIQUID OR GEL USED IN THE REMOVAL OF TARNISH, OXIDES, VERDIGRIS MANUFACTURING PROCESS CONTAMINANTS FROM IRON, STEEL, COPPER, BRASS AND ALUMINIUM.

#### **DESCRIPTION**

BIOX IS A RESULT OF 10 YEARS RESEARCH IN THE FIELD OF BIOCHEMISTRY TO PRODUCE A SAFE, NON-TOXIC, NON-FLAMMABLE RUST REMOVER.

#### **ODOURS**

VERY SLIGHT ORGANIC ODOUR.

#### **PERFORMANCE:**

#### FIRE:

NON-FLAMMABLE.

#### **CORROSION & CONTAMINATES**

AFTER OXIDE REMOVAL THE TREATED ARTICLE SHOULD BE PROTECTED BY PAINTING, OILING OR POLISHING.

#### TOXICITY:

NON-TOXIC. TESTS HAVE BEEN CARRIED OUT BY THE

- (1) FINNISH RESEARCH CENTRE
- (2) THAMES WATER
- (3) THE NATIONAL WATER COUNCIL

BIOX WAS VERIFIED TO BE NON-TOXIC

REPORTS ARE AVAILABLE.

#### **INGESTION:**

IS NON-HAZARDOUS.

#### WORKING LIFE:

BIOX CAN BE USED MANY TIMES UNTIL EVENTUALLY BECOMING EXHAUSTED - THIS MOMENT IS BEST JUDGED BY OBSERVATION.

#### **PURITY:**

BIOX HAS BEEN APPROVED TO THE CLEANING SPECIFICATION REQUIRED BY LLOYDS REGISTER OF SHIPPING

#### **WORKING TEMPERATURE:**

DO NOT USE BELOW 4 C. THE PROCESS OF RUST REMOVAL IS ACCELERATED WHEN OBJECT BEING TREATED IS WARMED.

#### APPLICATION: LIQUID

REMOVE ALL OIL, GREASE AND LOOSE SURFACE MATERIALS. SHAKE BIOX CONTAINER WELL BEFORE USE. VERY LIGHT RUSTING OR TARNISH IS REMOVED IN MINUTES. JUST IMMERSE THE ARTICLE FOR 15 MINUTES AND RINSE OFF WITH WATER. FOR HEAVY RUST AND CONTAMINANT REMOVAL, IMMERSE ARTICLE IN BIOX LIQUID FOR ANYTHING UP TO 8 HOURS DEPENDING ON DEGREE TO BE REMOVED.

PROLONGED IMMERSION IN BIOX CAN CAUSE THE COLOUR OF STEEL TO TURN SLIGHTLY DARKER. HOWEVER THIS WILL NOT EFFECT THE STRENGTH OF THE METAL. IF RUST OR OXIDE IS NOT COMPLETELY REMOVED, RE-IMMERSE IN BIOX

### BIOX SHOULD NOT BE USED ON DISSIMILAR METALS

#### APPLICATION: GEL

REMOVE ALL OIL, GREASE AND LOOSE SURFACE MA-TERIALS. SHAKE BIOX CONTAINER WELL BEFORE USE. VERY LIGHT RUSTING OR TARNISH IS REMOVED IN MINUTES. JUST APPLY A GENEROUS LAYER (2 MM, 1/8") OF BIOX TO THE SURFACE, LEAVE FOR 15 MIN-UTES AND WASH OFF WITH WATER. FOR HEAVIER RUST AND OXIDE REMOVAL APPLY BIOX AND COVER WITH PLASTIC CLING FILM OR A POLYTHENE BAG TO RETAIN THE MOISTURE. BIOX WORKS SLOWLY AND A PERIOD OF 8 HOURS MAY BE NECESSARY. IF EX-TENDED TREATMENT IS REQUIRED FREQUENT IN-SPECTION IS RECOMMENDED BECAUSE BIOX CAN CAUSE THE COLOUR OF STEEL TO TURN SLIGHTLY DARKER. JUST WASH OFF A SECTION FOR INSPEC-TION. IF RUST OR OXIDE IS NOT COMPLETELY RE-MOVED RETREAT WITH BIOX.

BIOX IS NOT HARMFUL TO PAINT, WOOD, STONE, CHROME, TEXTILES, PVC, METALS OR RUBBER.

#### PACKAGING & STORAGE

THE PRODUCT HAS A SHELF LIFE OF 1 YEAR FROM OPENING AND SHOULD NOT BE STORED BELOW 0 C

NATO No. 0889/0473/6850-99-701-8645 0899/0473/6850-99-920-1435

CLEANING SOLUTIONS COMBINING:
BIOX '02' IMMERSION FLUID
BIOX BIODEG
UTLRASONIC EQUIPMENT

### **SOME INDUSTRIAL USES**

(A)	Rust removal, metal finishing etc.
(B)	Cleaning oxygenated life support systems.
(C)	Carbon removal (aircraft & missile turbo systems).
(D)	Cleaning of steel moulds (plastic & rubber industry).
(E)	Cleaning air conditioning units.
(F)	Cleaning valves (petroleum industry).
(G)	Removal cement (building industry).
(H)	Cleaning artifacts (museums).
(I)	Cleaning vehicle bodies (transport industry).
(J)	Cleaning aluminium & stone masonry (architectural).
(K)	Marine equipment.
(L)	Rust mould on textiles.
(M)	Railway electrical connectors & brake gear.
(N)	Textiles Spinnerets.
(O)	Cleaning braised welded pipe work in Steel, Copper and Alloy.

CLEANING SOLUTIONS COMBINING:
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UTLRASONIC EQUIPMENT

	LIQUID	GEL
Appearance	Brownish Green Liquid	Brownish Green Gel
Specific Gravity	1.02	1.04
pH.	2.2	2.7
Freezing Point	-3 C.	-3 C.
Boiling Point	96 C.	85 C.
Flash Point	None, Non-combustible	None, Non-combustible
Storage	Do not allow to freeze	Do not allow to freeze
Containers	Plastic or Stainless Steel	Plastic or Stainless steel
Spillage Procedure	Flush down drain with water	Flush down drain with water

**CAUTION**: If Biox comes in contact with eyes, rinse with plenty of water.

### LABORATORY RESULTS OF EVAPORATION RATE OF LIQUID BIOX IN AN OPEN CONTAINER

250 ml each of Biox and water in separate open containers were placed in an oven for 24 hours at 40 Deg. C. Another container of 250 ml Biox was kept at room temperature, I.E. 20 Deg. C. for 24 hours.

The results are as follows:-

250 ml Biox at	40 Deg. C.	lost	73ml
250 ml Water at	40 Deg. C.	lost	88ml
250 ml Biox at	20 Deg. C.	lost	8ml

CLEANING SOLUTIONS COMBINING:
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#### **GENERAL INFORMATION.**

As Biox contaminant removers do not contain any strong solvents, any heavy layers of grease or wax on the surface to be cleaned may retard the process. If it is suspected that the surface is covered with grease or oil, it should be removed.

As in all chemical reactions temperature is of great importance for the rapidity of the process. See fig. 1.

### REACTIVE EFFECTIVENESS AGAINST TEMPERATURE

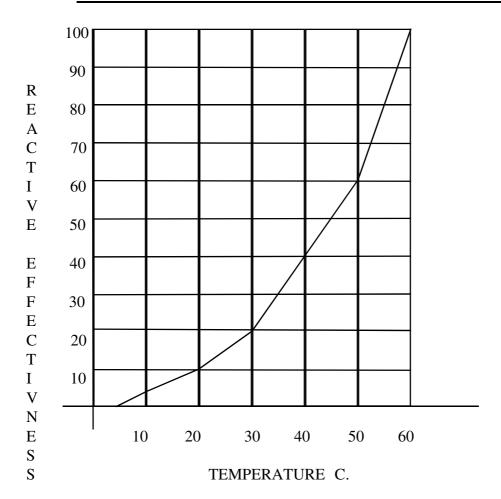


FIG 1.

In practice the lowest temperature recommended is +10 C.

The liquid can be warmed even up to +80 C.; the time of treatment will be cut down to 1/10 compared with treatment at +20 C.

CLEANING SOLUTIONS COMBINING:
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#### **GENERAL INFORMATION (CON'T)**

When using gel on a warm object or if the time of treatment must be prolonged to over 6 hours because of low temperature, the layer of gel can be covered with, say, polyethylene or else a thicker layer (5 - 10 mm) of Biox can be applied to prevent drying.

As the diffusion of active molecules is faster in liquid than in gel, the immersion treatment gives the best results, especially in removing thick layers of contaminant.

#### Consumption.

The thickness of the contaminant layer and the amount of salts and other impurities in it obviously affect the amount of Biox required to do the job. Therefore, only rough estimates can be given.

	GEL	LIQUID	
Light surface rust. face	1 - 2 mm	0.5 - 1.0 Litre/M2 of rust sur-	
Medium rust	2 x 2 mm	1.0 - 1.5 " "	
Heavy rust	2 x 3 mm	1.5 - 2.5 "	6

#### A layer of 1mm corresponds to 1 litre/M2

When the pH-value of the liquid has risen to 4.5 - 5.0 certain components start to crystallize on the object to be cleaned. Then also the effectiveness of the liquid has decreased and it should be replenished. If crystallization occurs, the white (yellow) film may be removed with water.

#### **Note concerning treatment**

As with all chemical treatments, during treatment with Biox an electrochemical potential difference between different metals will develop. The baser metal becomes an anode and the more precious one a cathode. Thus, the anode metal will dissolve.

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#### MATERIAL SAFETY DATA SHEET FOR BIOX 02 LIQUID

Compilation date: 22/03/2016 Revision No: 16

Section 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1. Product identifier

Product name: BIOX 02 Liquid

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.3. Details of the supplier of the safety data sheet

Company name: Biox Ltd

The Granary Yeo Lane North Tawton Devon EX20 2DD

Tel: 01837 880135 Fax: 01837 880063

Email: bioxint@hotmail.com
1.4. Emergency telephone number

Emergency Tel: 01837 880135 (office hours only)

#### **Section 2: Hazards identification**

2.1. Classification of the substance or mixture :

Classification under CLP: This product has no classification under CLP.

- 2.2. Label elements Label elements: This product has no label elements.
- 2.3. Other hazards

PBT: This product is not identified as a PBT/vPvB substance.

#### Section 3: Composition/information on ingredients

3.2. Mixtures

#### Section 4: First aid measures

4.1. Description of first aid measures:

Skin contact: Wash immediately with plenty of soap and water. Eye contact: Bathe the eye with running water for 15 minutes.

Ingestion: Wash out mouth with water.

Inhalation: Consult a doctor.

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#### CON'T MSDS pg. 2

#### Section 4: First aid measures

4.2. Most important symptoms and effects, both acute and delayed

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness. Ingestion: There may be irritation of the throat.

Inhalation: No symptoms.

4.3. Indication of any immediate medical attention and special treatment needed Immediate / special treatment: Not applicable.

#### **Section 5: Fire-fighting measures**

- 5.1. Extinguishing media: Suitable extinguishing media for the surrounding fire should be used. Use water spray to cool containers.
- 5.2. Special hazards arising from the substance or mixture: Exposure hazards: In combustion emits toxic fumes.
- 5.3. Advice for fire-fighters: Advice for fire-fighters: Wear self-contained breathing apparatus. Wear protective clothing to prevent contact with skin and eyes.

#### Section 6: Accidental release measures

- 6.1. Personal precautions, protective equipment and emergency procedures: Personal precautions: Refer to section 8 of SDS for personal protection details. Turn leaking containers leak side up to prevent the escape of liquid.
- 6.2. Environmental precautions: Environmental precautions: Do not discharge contaminated liquid into drains or rivers. Contain the spillage using bunding. Sluice to waste using plenty of cold water through normal sewerage system
- 6.3. Methods and material for containment and cleaning up: Clean-up procedures: Absorb into dry earth or sand. Transfer to a closable, labeled salvage container for disposal by an appropriate method.
- 6.4. Biox 02 is neutralised by adding Sodium Bicarbonate, NaHC03 (Baking Soda. 6% raises pH to 5.5, 9% raises pH to 7.0)
- 6.5 Reference to other sections: Refer to section 8 of SDS.

#### Section 7: Handling and storage

- 7.1. Precautions for safe handling
- 7.2. Conditions for safe storage, including any incompatibilities: Store in a cool, well ventilated area. Keep container tightly closed.
- 7.3. Specific end use(s): No data available.

CLEANING SOLUTIONS COMBINING: BIOX '02' IMMERSION FLUID BIOX BIODEG UTLRASONIC EQUIPMENT

#### CON'T MSDS pg. 3

#### Section 8: Exposure controls/personal protection

8.1. Control parameters:

Workplace exposure limits: No data available.

DNEL/PNEC Values: DNEL / PNEC: No data available.

8.2. Exposure controls:

Respiratory protection: Respiratory protection not required.

Hand protection: Protective gloves.

Eye protection: Safety glasses. Ensure eye bath is to hand.

Skin protection: Protective clothing.

#### Section 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

State: Liquid

Colour: Pale yellow

Solubility in water: Soluble Viscosity: Non-viscous Relative density: 1.03

pH: 2.2

VoC: Low Voc rating - VTT Technical Research Centre of Finland's analysis shows that Biox 02 Liquid has a

Low VOC emission and is Non Flammable (Research report NO: VTT-S-06516-07).

9.2. Other information: Other information: No data available.

#### Section 10: Stability and reactivity

- 10.1. Reactivity: Stable under recommended transport or storage conditions.
- 10.2. Chemical stability: Stable under normal conditions.
- 10.3. Possibility of hazardous reactions

Hazardous reactions: Hazardous reactions will not occur under normal transport or storage conditions.

Decomposition may occur on exposure to conditions or materials listed below.

- 10.4. Conditions to avoid: Extreme Heat Evaporation may occur.
- 10.5. Incompatible materials: Materials to avoid: Strong oxidising agents. Strong acids.
- 10.6. Hazardous decomposition products: In combustion emits toxic fumes.

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#### CON'T MSDS pg. 4

#### 11.1. Information on toxicological effects

Toxicity values: Non Toxic.

Symptoms / routes of exposure

Skin contact: There may be mild irritation at the site of contact.

Eye contact: There may be irritation and redness. Ingestion: There may be irritation of the throat.

Inhalation: No symptoms.

#### **Section 12: Ecological information**

12.1. Toxicity

Ecotoxicity values: No data available.

- 12.2. Persistence and degradability: Biodegradable.
- 12.3. Bioaccumulative potential: No bioaccumulation potential.
- 12.4. Mobility in soil: Readily absorbed into soil.
- 12.5. Results of PBT and vPvB assessment: PBT identification: This product is not identified as a PBT/vPvB substance.
- 12.6. Other adverse effects: Negligible ecotoxicity.

#### Section 13: Disposal considerations

13.1. Waste treatment methods

NB: The user's attention is drawn to the possible existence of regional or national regulations regarding disposal.

#### 14) **Transport information:**

**General Transportation:** Not dangerous for carriage.

Rail Transport Notes Not Classified.

**Marine Pollutant:** No.

Sea Transport NotesNot ClassifiedAir Transport NotesNot ClassifiedExport Tariff No.3402909000

**Eori** GB 439735417000

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CON'T MSDS pg. 4

#### 15) Regulatory information:

**Risk Phrases:** Not Classified. **Labeling:** (77/728 EEC)

- 15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
- 15.2 Specific regulations: Not applicable.

#### 16) Other information:

After use rinse and dry hands thoroughly. People with sensitive or damaged skin should avoid prolonged contact. Biox 02 should not be used on dissimilar metals.

Other information: This safety data sheet is prepared in accordance with Commission Regulation (EU) No 453/2010.

\* indicates text in the SDS which has changed since the last revision.

Legal disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

Revised 16 th edition

CLEANING SOLUTIONS COMBINING: BIOX '02' IMMERSION FLUID BIOX BIODEG UTLRASONIC EQUIPMENT





Our ref. 69/513/08

January 21,2008

1(1)

BIOX LTD Paul Gunning 52 Hughenden Avenue High Wycombe, Bucks HP13 5SJ UNITED KINGDOM

#### USE OF VTT'S NAME IN SALES PROMOTION

Content of sales promotion:

Application has been received: By email, January 16 2008

Product: Biological BIOX 02 Immersion Fluid

Appendices:

A sketch of brochure, commercial or www-page

Other appendix, what: Letter

VTT's general terms of contract sets following:

#### 10. THE PUBLICATION OF THE RESULTS

10.1 The owner of the foreground is entitled, at it's discretion, to publish the final research report or the test report belonging to the foreground, in its entirety. The publication in part of the research report or the test report is only permissible by written authorization from VTT.

10.2 In publication of the results of the commission, the name of VTT shall be mentioned in an appropriate manner.

10.3 The client shall be entitled to use VTT's name or logotype in advertising or in other sales promotion only with a written consent from VTT. VTT's permanent rules shall apply accordingly. 10.4 For verifying the claims presented in public VTT shall have the right to give information on the results of the commission to a third party requesting for it to the extent needed to verify the claims.

[]	VTT gives permission to use VTT's name in sales promotion in the way as You have proposed.
[X]	VTT gives permission to use VTT's name in sales promotion with following terms:
that :	's name is referred in the following way: VTT Technical Research Centre of Finland's analysis shows Biox 02 Liquid has a Low VOC emission and is Non Flammable (Research report NO: VTT-S-06516-  Ltd accepts the terms in chapter 10 of VTT's general terms of contract (given above).
[]	Permission is denied.
Place	e and time Espoo, 21 January 2008
Sign	Sulo Piepponen, Service Manager

CLEANING SOLUTIONS COMBINING:
BIOX '02' IMMERSION FLUID
BIOX BIODEG
UTLRASONIC EQUIPMENT





Tungum Limited Number One, Ashchurch Parkway, Tewkesbury, GL20 8TU



Certificate No: TC101

Telephone: 01684 271290 Fax: 01684 291714

#### **TEST CERTIFICATE**

Customer:

In-house test Tungum Ltd Number One Ashchurch Parkway Tewkesbury Glos GL20 8TU Customer O/No: N/A - in-house test

Our Ref: Drg/Part No: TC101 Biox 2

Description:

Flushing Agent

Tested by:

Sean Hammond

Date Supplied: 15/4/10

#### INTRODUCTION

BIOX 2 is used as a flushing agent for general hydraulic and dive systems.

Testing was carried out to check there are no compatibility issues when it comes into contact with Tungum Alloy.

#### **TEST METHOD**

The solution was tested by semi-submerging 2 x 4" lengths of Tungum alloy tube in neat solution at ambient temperature for a period of 96 hours.

#### CONCLUSIONS

The tubes were removed from the solution and dried. Visual inspection revealed no detrimental effect to the surface of the tubing and the overall finish was considered acceptable.

Date: 21st April 2010

For and on behalf of TUNGUM LTD



TTL - 020 - ISS 1

CLEANING SOLUTIONS COMBINING: BIOX '02' IMMERSION FLUID BIOX BIODEG
UTLRASONIC EQUIPMENT

Biox Ltd

To:



**Thames Water** 

New River Head Laboratories 177 Rosebery Avenue, London EC1R 4TP

Telephone Ol 837 3300 Ext. 2104

Director of Scientific Services,

 $Hugh\ Fish.O.B.E..B.Sc.F.R.J.C.F.I.W.E.S., FI.P.H.E., F.Inst, W.P.C.$ 

Our. ref: JSC/JMO Your ref:

Date 26th October, 1978

CONFIDENTIAL TEST REPORT ON MATERIALS FOR USE IN CONTACT WITH POTABLE WATER

Report No. MWS 1082

Material: Biox Liquid Rust Remover

Component:

Fitting:

Material Manufacturer: Biox Ltd.,

**Component Manufacturer:** 

Fitting Manufacturer:

Submitting Manufacturer: Biox Ltd.,

Soaking test's produced no taste, colour and turbidity were unaffected and toxic metals were not detected.

Toxicity tests using monkey kidney cells showed no cytotoxicity.

Micro biological growth tests showed that this material did not support the growth of coliform organisms, bacteria capable of growth at 370c and 220c, <u>Pseudomonas aeruginosa</u> or fungi.

There is therefore no objection from the water quality point of view to the use of this product in contact with potable water provided that there is no change in the nature and source of the ingredients or in the process of manufacture.

Jennyer Colboure

For Manager, Metropolitan Water Services

CLEANING SOLUTIONS COMBINING: BIOX '02' IMMERSION FLUID BIOX BIODEG
UTLRASONIC EQUIPMENT





Chairman Sir Robert Marshall K.C.E. M.B.E.

Head of Unit J.S.W. Bath

Fittings, Testings and Standards Unit

Fittings Testing Station The Causeway Staines Middlesex TW8 3DR

11th April, 1979

Dear Sir

"Items which have passed full tests of effect on water quality" - Sample No.

Our Ref: JSWB/GDM/ LJG 7904MX

1. Referring to your application for the material described below to be approved: the National Water Council has considered the results of the tests for effect on water quality carried out on the products so described, and has decided that there is no objection to their uses provided the source, nature and manufacturing processes of the ingredients and products are not changed.

#### COATINGS, PAINTS & LININGS

"BIOX" LIQUID RUST REMOVER

7904 MX

2. An entry, as above, will accordingly be included in the forthcoming supplement to the NWC "Classified List of Fittings Accepted" under the section headed, "Items which have passed full tests of effect on water quality', a copy of which will be sent to you in due course.

ESS BUSS

J.S.W. Bath

Head of Fittings Testing & Standards Unit

CLEANING SOLUTIONS COMBINING: BIOX '02' IMMERSION FLUID
BIOX BIODEG
UTLRASONIC EQUIPMENT





#### CASE STUDY

Divex, Aberdeen (42 employees)

Manufacturing deep-diving and hyper baric medical equipment the Company had used CFC-113 to clean pipe work and valves in an ultra-sonic bath process. Anticipating the C. F. C. phase out, the company switch in 1991 to Biox which is an organically based solvent. Biox was found to be more efficient and cheaper. No new equipment was required and operating cost were reduced.

#### LAWS AND ECONOMIC INSTRUMENTS

International, European and UK laws on the environment all have an impact on business and it makes business sense to keep abreast of developments anticipate changes and keep within the expected guidelines.

On an international level, there are agreements to reduce the use of substances whose environmental impact is globally damaging. C.F.Cs, for example, are being phased out by the end of 1994 because they destroy the ozone layer and by the end of 1993 are unlikely to be available. Many businesses are affected by international controls: if you're one of them you should be acting now!

In the European community, over 350 pieces of environmental legislation have been published. The trend now is towards a program of sustainable economics activity requiring the voluntary commitment of all members of society. An eco labeling scheme for consumer goods, for example, will allow customers to choose products which are less damaging to the environment. The scheme is voluntary, but gives a marketing advantage to those products carrying the eco label. Within Europe, different countries have their own legislation. If you've done business with Germany, for example, you'll know that this can be quite demanding.

In the UK, her Majesty's Inspectorate of Pollution (H. M. I. P.), local authorities and the National Rivers authority (N. R. A.) are the main players in controlling those industrial processes that most pollute the environment. These two bodies are due to combine with waste authorities to form the environment Agency. Integrated pollution control-treating the land, water and air as a part of a whole to the policed together-is a fundamental principle and covers the most polluting industrial processes. For industry, best available techniques not entailing excessive cost (B. A. T. N. E. E. C.) is the pragmatic measure you may need to match up to. A second level of controls covering releases to air only, are regulated by local authorities on similar principles. These apply to a far greater range of companies - your company could be one of them. You should also be aware of the "duty of care" regulations which make you responsible for the ultimate disposal of all waste: it doesn't stop being your concern when your disposal contractor drives it away from your premises.

Economic Instruments are likely to become more important in the UK and Europe. As an example, to encourage the recycling of packaging their could be raw material and product taxes, waste collection and disposal charges, and a take-back duty on suppliers.