

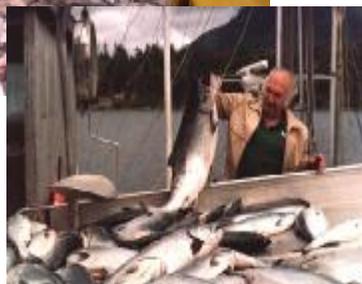
Solutions for Fish Processing

An Introduction to Our Products and Their Applications

Scotmas Limited
Splyaw Road
Kelso,
Borders, TD5 7EH
Scotland

Tel +44 (0)1573 226901
Fax +44 (0)1573 226026
Email enquiries@scotmas.com
Web <http://www.scotmas.com>

Scotmas Aquaculture
Water Treatment – Healthcare – Environmental Care



About **Scotmas**

Building on our many years of experience in water treatment, hygiene and environmental care in the food industry – We are delighted to introduce our latest range of products for the fish processing industry.

Based on powerful, yet environmentally safe biocides and hygiene products, Scotmas biosecurity programs are capable of obtaining longer shelf life and improved product quality at the processing plant.

Our company is focussed on providing the best quality service and support to the Industry. For further information, please do not hesitate to call, or visit us on the web at:

<http://www.scotmas.com>

The **Scotmas** Product Range

As part of our commitment to the Fish Processing market, Scotmas have developed a range of products designed to combat bacterial infection, extend shelf life, and improve overall product quality. The following pages outline the use of our products in various parts of the industry

Cidox™	Chlorine Dioxide for use in the processing plant. Applied at low levels to wash water and ice using our innovative range of dosing equipment. Careful attention to processing plant water quality ensures long shelf life, and a high quality product
Hysol™	Low toxicity, general area sanitisers used on farm and in the processing plant as part of a comprehensive CIP / Biosecurity regime
Hysan™	Highly effective range comprising sanitising fogs for use as alternative to formaldehyde – as well as personal care and surface wipe ranges
Aquabon™	Citrus based product used for fillet dipping in order to provide a long lasting biocidal effect, and enhance product quality
BK WWT™	Comprehensive range of waste water bioaugmentation products designed to enhance environmental compliance standards for processing plants

Scotmas products are also used in a number of areas associated with Fish Production and Processing.
For information on our programs for **Shrimp and Prawn Growing**, please see our separate booklet.

Farm to Plate Hygiene Solutions

Scotmas Products are used throughout the industry from the hatchery through to the processing plants and retail environments. Application of Scotmas products at key control points in the HACCP regime will ensure the highest final product quality:

Harvesting / Fishing Boats



The quest for high quality fish products begins at the harvesting stage, or in the case of seafish – the fishing boat. The maintenance of hygienic conditions in fish holds, crates and market areas is required by law. Our Hysol detergent/sanitiser product is used to disinfect and clean crates, equipment and all other hard surfaces during turn-arounds, removing the need for two stage cleaning and disinfection of soiled areas.

Our Hysan range of personal care products ensure that operators handling the fish do not transmit bacteria and viruses to the surface. Products include hand and surface wipes, as well as an alcohol free hand sanitising gel that does not cause skin drying and chaffing.

In order to reduce stress and adrenalin release during the harvesting process in aquaculture applications, Scotmas recommend the use of the IW Fish Harvester™. This unit automatically stuns and slits the fish, and is capable of processing up to 6 tons of salmon per hour without the harmful release of adrenalin into the muscle caused by manual harvesting techniques.

Once packed into crates for transport, a small amount of Aquabon, diluted in water should be poured over the fish in order to remove surface bacteria such as listeria that will begin to spoil the fish in transport. The ice used for packing the fish should be manufactured with our Cidox chlorine dioxide biocide. The slow release of chlorine dioxide onto the surface of the fish as the ice melts will help to prevent spoilage and odours during transport.

Processing Plant

Scotmas products are designed to be integrated into the most rigorous HACCP regimes. We have designed powerful techniques that can be used at key control points in order to reduce bacterial loading to well within acceptable levels. Our staff have a number of years experience in this field, and are able to assist in the design and implementation of appropriate monitoring systems where required.

Our Cidox chlorine dioxide precursor is normally used to treat all water used within the processing plant. Cidox is applied through an efficient, low cost Scotmas dosing system that removes the need for an expensive ClO₂ generation system, and allows the smallest plants to benefit from this powerful biocide. Chlorine dioxide is a particularly



powerful water biocide, and will assist in reducing bacterial counts throughout the plant.

Our Hysol range of detergent sanitisers removes the need for separate cleaning and disinfection stages during the CIP process. Applied through a pressure washer or through spray-line header tanks, this powerful, yet low toxicity disinfectant/sanitiser will ensure superb results with minimal turn-around times.

Hysan liquid is used for fogging applications in chillers and cold rooms, and provides excellent biocidal results.

Hysan has also been formulated into a range of personal care products suitable for use throughout the plant. These products contain no added alcohol, which can cause skin chaffing and operator discomfort after frequent use.

For final rinses or fillet dipping, our Aquabon product provides an excellent long-term biocidal action. Aquabon is a natural product that is suitable for use in organic products. Aquabon's citrus action will help to maintain product quality until consumption.

The combination of Scotmas hygiene products in the processing plant allows for an effective response to HACCP requirements of the most demanding customers. Other products from the Scotmas Building Services range may be used in the plant to combat common problems such as odour control, washroom hygiene and drain maintenance.



Ice Production



Cidox is increasingly being used in ice making machines in order to improve their efficiency, and to apply a low level of biocide to the ice, where it will help to reduce odours and prevent product degradation in transport.

Suitable for use in ice for fish transport and final products.

Cidox application in ice represents a low cost method of providing a top quality product to consumers.

Transport

Our Hysol DS range is particularly useful in transport applications, including crate and vehicle washing. The high efficiency of the combined detergent sanitiser ensures that great results can be achieved in a short space of time. Hysol is environmentally friendly, with the primary breakdown products being Oxygen and water.

Retail

Scotmas have a specific range of products for food hygiene in retail environments, that will ensure that your product reaches the consumer in prime condition. For further details on this range, please contact Scotmas.

Cidox

Effective Water Treatment for Processing Plants

The benefits of chlorine dioxide water treatment in processing plants have been well known for many years. The high capital cost of generation equipment has restricted its use to only the biggest plants. Now, Cidox technology from Scotmas allows chlorine dioxide to be applied in a safe and easy to use form, suitable for the smallest operator



Water is one of the biggest single raw materials used in the processing system, and its quality is of great importance to prevent contamination of the food product. Water will always carry bacteria. Without proper treatment, the bacteria will grow in water storage tanks and pipe work to infect the water passing through. The use of contaminated water in the food processing plant can spread contamination across a whole batch.

Too many processing plants still rely on the application of chlorine or similar ineffective biocides in process water, or worse – take no additional treatment measures and rely on external factors to control what is undoubtedly the second most important raw material in any processing plant.

Scotmas pioneered the use of simple, cost effective chlorine dioxide dosing systems in the early 1990s, and have continued in this market leading position to date. Our Cidox chlorine dioxide product has been specifically designed for use in processing plants in conjunction with our state of the art range of dosing equipment.

Automatically applying low levels of Cidox to process water will ensure that bacterial contamination is reduced within the plant, making HACCP compliance easier to achieve.

While the use of high levels of chlorine and similar products is being restricted in a number of jurisdictions due to the risks of carcinogenic by-products, ClO₂ use in the food industry has gone from strength to strength as processors seek an effective, modern alternative.

Recommended Application Rates

General Background Treatment	1 – 1.5 ppm ClO ₂	Use Scotmas Alpha or Bravo automatic dosing systems
Final Product Spray/Rinse	1.5 - 3 ppm ClO ₂	

Cidox

Top Quality Ice Production

Ice can only be as good as the water used to make it. Cidox improves ice quality and can reduce production costs.

- **Cidox removes impurities and improves the taste and odour from the product. Freezing points are increased, so increasing efficiency**
- **Cidox purifies the water and provides a chlorine dioxide residual which helps to protect fresh foods.**
- **Cidox strips out *biofilm* and destroys bacteria helping to reduce corrosion and increase heat transfer efficiency.**

Chlorine dioxide has rapidly become accepted as one of the most effective biocides available for use in food products. The effectiveness of the biocide over Listeria, Salmonella and a wide range of E. Coli and many other contaminants at low concentrations has hastened its introduction into ice making.

A number of European fish producers are now using chlorine dioxide treated ice for transportation of finished product, and raw material to their plant. Cidox is added to the ice make up water using a Scotmas dosing system. During transport, the ice melts and the treated water comes in direct contact with the produce and any bacteria present.

In the case of fish the reduction of the bacteria is accelerated as in the presence of brine the rate of release of chlorine dioxide from the treated water is increased. As the chlorine dioxide is not all released at one time it is possible to treat the ice with higher levels of product than would normally be the case if using free chlorine dioxide. If the ice were treated with only free chlorine dioxide there would be the possibility of food taint.

A major problems associated with ice hygiene is that the inside of the manufacturing plant is extremely difficult to clean and there is a substantial build up of biofilm inside the plant. This biofilm will harbour bacterial development which will subsequently contaminate the ice. Constant use of Biox will keep the system free of biofilm.

Recommended Application Rates

Ice Make Up Water	3 ppm ClO ₂	Apply automatically with the Scotmas Alpha or Bravo doser
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It is important that prior to commissioning with the Cidox system that the plant is thoroughly sterilised with a shock dose of chlorine dioxide. If this is not done then the Cidox used to treat the process water will be used up gradually cleaning contamination that has built up within the plant. Pre - use sterilisation is achieved by filling the plant with a 50ppm solution of activated chlorine dioxide and allowing to stand for 1 hour before flushing.

Hysol

Complete Cleaning and Sanitation

Our new Hysol range is designed for use where an all in one detergent sanitiser is required – yet the highest standards of biocidal effectiveness are required. Hysol offers an effective clean & fast turn around times in a safe and easy to use product.

Concept

Hysol is based around a source of peracetic acid – a powerful sanitiser that is extremely environmentally friendly, and has no hazardous breakdown products. The unique formulation of Hysol eliminates handling problems, and ensures an extremely efficient cleaning and biocidal effect.

Hysol is effective against a wide variety of organisms, and has been demonstrated to remain effective even in soiled conditions. Scotmas provide Hysol compound in a number of forms:

Boot Bath

Use as a non-toxic, non corrosive boot bath / foot dip in all areas around the farm and processing plant. Supplied with a dye to show user when recharge is necessary

General Sanitiser

Hysol may be used as a stand-alone sanitiser to achieve excellent results in CIP and general cleaning applications. Supplied as 2 part liquid or powder that can be supplied with adaptors for use in conjunction with existing CIP equipment where required

Detergent / Sanitiser

All the power of Hysol Sanitiser with the added benefit of a powerful detergent action to remove soiling. Use of Hysol detergent/sanitiser increases CIP turn around times without compromising the cleaning or biocidal effect.



Recommended Application Rates

Powder Hysol	Dissolve 600 grams Hysol Powder in 10 litres warm water to give a concentrate containing 2000 ppm PAA	Dilute concentrate 4-10% in power washer to apply (50-200ppm PAA)
Liquid Hysol	Mix two-part liquid concentrate to activate product	Apply concentrated solution at 0.25 – 1% in power washer (50-200ppm PAA)

Consult Scotmas for details of application rates for a variety of tasks

Hysan

The Complete Sanitiser and Deodoriser

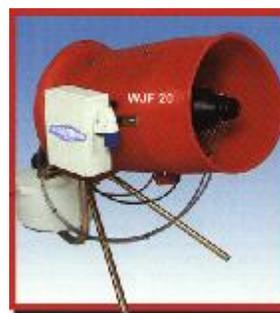
Hysan is a powerful combination of chlorine dioxide and quaternary compounds designed for use in fogging applications and end-of-day clean downs. Hysan is bactericidal, fungicidal and sporicidal and is used as a direct replacement for dangerous gluteraldehyde and formaldehyde treatments

Hysan is a broad spectrum sanitiser and deodoriser suitable for hard surface disinfection and fogging applications.

The ever increasing risk being posed by airborne spores and viruses means that more sites than ever before are incorporating a sanitising fog into their hygiene regime. While Gluteraldehyde and Formaldehyde based products have traditionally been used in this area, Environmental and Health & Safety concerns have led to their discontinuation in a number of jurisdictions.

Hysan is bactericidal, fungicidal and sporicidal, as well as being a highly effective deodoriser. Hysan can be relied upon to give the best possible results, both in the hatchery, and in the processing plant for periodic disinfection of processing areas and cold rooms as part of your CIP regime.

Hysan is best used in conjunction with our Wanjet® range of fogging systems, which may be provided in hand-held, mobile tripod, or fixed mount versions



For best results in hard surface cleaning prior to fogging, use between a 5 and 20% dilution of Hysan Super Concentrate, Hysan Hard Surface Wipes, or our Hysol range of combined detergent/sanitserers.

Recommended Application Rates		
Fogging of Fish Holds, Vehicles, Processing Areas, Cold Rooms and Equipment	5% Hysan Super Concentrate in Fogger	Fog all areas in a methodical order, i.e. Top to Bottom , paying particular attention to corners and behind equipment
Liquid Hard Surface Sanitiser	5% to 20% Solution of Hysan Super Concentrate	Apply solution manually with trigger spray or with mop. Consider use of Hysan Wet wipes where appropriate

All the above are General Guidelines only. Dose rates may vary according to your individual requirements. Always follow Health & Safety guidelines when fogging chemicals and wear a respirator with organic filter. Remove or cover all foodstuffs prior to commencing work. Hysan should only be used on surfaces or equipment that have been physically cleaned. Consider use of our Hysol combined detergent / sanitiser in soiled areas.

Hysan Personal Care

Maintenance of good operator hygiene is an essential part of biosecurity and hygiene programs on both the farm and processing plant.

Scotmas personal care products are built on the powerful properties of our Hysan sanitiser, and are extremely user friendly. Scotmas offer a range of products, including hand soap, sanitising gel, and wipes



Hysan Biocidal Soap

Hysan Biocidal Hand Soap is one of the most powerful germicidal hand cleaners available. Specifically formulated to provide effective germicidal activity at a level to ensure adequate protection against some of the most dangerous bacteria including Salmonella. In laboratory tests 99% of the test micro-organisms were killed in less than 15 seconds.

Hysan Biocidal soap is extremely effective against a Gram Positive and Gram Negative bacteria yet remains mild enough to be used on the face and other parts of the body with complete confidence without depleting the skin's natural protective barrier.

Hysan Hand Gel

Used as a follow-up to Hysan Soap, or as a stand-alone hand sanitiser in between washing, Hysan Gel contains a powerful sanitiser yet does not have the harsh chaffing and drying effects of alcohol based sterilising scrubs. The active molecules in Hysan Gel spread rapidly, penetrating easily into skin folds and pores, quickly destroying germs and sources of infection. This fast acting broad-spectrum hand gel requires no water, and provides protection for up to 4 hours with the added benefit of a skin softener to leave operators hands soft and supple

Hysan Wipes



Hysan wipes provide an ideal complement to CIP and general hygiene regimes. Hysan disposable wipes are available for a number of areas:

- Quick Drying Wipe for Equipment Cleaning
- Hard Surface Wipe
- Hand Sanitising Wipe

Hysan wipes for the food industry are provided with a tough nonwoven fabric that will withstand the most heavy duty use before disposal

Aquabon

The Natural Alternative

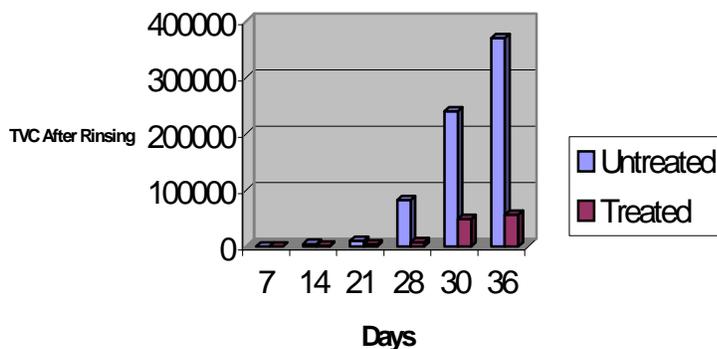
Complementing our range of biocides, Aquabon is a natural citrus based product that is suitable for use in the transport of pre-processed whole fish, and as a fillet-dip to improve freshness and appearance. Suitable for use in organic processing, Aquabon provides a truly natural alternative



Aquabon is a blend of citrus bioflavonoid extracts and GRAS listed additives specifically designed for use in the food processing industry. Aquabon is an extremely effective biocide, with broad spectrum activity against a range of microorganisms.

A unique property of Aquabon is its long residual and antioxidant activity, even in the presence of external organic matter. This makes it particularly suitable for maintaining low bacterial levels in pre-processed fish (May be applied on fishing boats or at market prior to transport), as well as the treatment of processed fillets prior to packing

Extensive test work has been carried out on the biocidal properties of Aquabon, and its effectiveness several days after application. The work cited here relates to shelf life trials carried out on treated Salmon Fillets



Recommended Application Rates		
Fish Transport	1-2% Dilution Aquabon	Apply manually in water to surface of fish
Fillet Dipping	Consult Scotmas	Dip fillets in solution prior to packing

Effective Waste Water Treatments

Increasing environmental legislation means that more plants are having to closely monitor effluent discharges, and take closer care of internal waste water treatment systems. BK WWT microbes are designed for natural bioaugmentation in activated sludge, biodisc, trickle filters and other popular waste water treatment systems.

BK WWT Microbes are specially selected by Scotmas to boost the natural microbe population in your plant. Scotmas select specific strains of microbe according to your site requirements – including temperature, pH and size considerations. In the case of processing plants, our products contain a high proportion of grease and fat digesting microbes that will help to break down materials associated with high BOD in effluent.



BK WWT Microbes can be manually applied during plant start-up, or as a reseeded dose after “toxic shock” or cold weather destroys the efficiency of the natural microbes in the system. Plants that struggle to comply with discharge consent levels often use BK WWT Microbes in conjunction with one of our automatic dosing systems to provide continuous bio-augmentation in order to improve efficiency. This process ensures that the right microbes are always present in the system, and can assist in reducing discharge levels, and make substantial savings on your effluent costs.

For plants running normally, but facing particular problems in a single aspect of effluent (e.g. High BOD or Suspended Solids), our microbiologists can advise on a specific program that will assist in bringing the plant back into compliance. We currently work with a number of consultants who will be able to provide a tailored program of on-site assistance should this become necessary.

The efficiency of any waste water treatment system is affected by high concentrations of toxic biocides, detergents and soaps in the waste water stream. The Scotmas range of biocides and sanitising products have been specifically designed to limit the effect on downstream waste water treatments, and do not produce chlorinated organics and other compounds that are difficult to biodegrade. Scotmas hygiene products are the ideal partner to ensure excellent efficiency in your waste water treatment plant.

Recommended Application Rates		
Plant Start-up / Reseed	Consult Scotmas	Apply seeding dose manually to system for one week, then taper down
Continual Treatment	5-10 kg / week based on 500 m ³ flow per day	Apply manually, or via automatic doser to incoming water stream

Use above as a guide only. Exact dosage recommendations are dependent on a site survey and analysis of your current discharges by our specialist team, who will devise a treatment strategy customised to your need

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Spylaw Road
Kelso, Borders
TD5 8DL
Scotland

T +44 (0)1573 226901
F +44 (0)1573 226026
E enquiries@scotmas.com
W <http://www.scotmas.com>

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