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GLOBAL TESTING SERVICES LTD



Working to improve the textile environment

Practical Expertise in Environmental Technology

An Introduction to Enco

Enco is an environmental consultancy and testing laboratory with a unique heritage and ability to help the textile industry overcome the many challenges created by the modern concern for the Environment and the impact that wool and wool processing in particular can have upon it.

Originally formed as a part of the prestigious International Wool Secretariat, Enco is now part of the Curtis Wool Direct Group but working as an independent organisation with a clientele base around the world.

With over 35 years of experience in the wool textile industry Enco is well placed to offer it's clients and partners timely, cost-effective and practical solutions in areas such as water pollution, waste management, legislative compliance and general textile analysis.

These services cover the whole spectrum of the wool textile industry and associated chemical industries and are available to individual companies as well as to industry groups and sectors.

Enco runs a modern well-equipped environmental and chemical analysis laboratory and carries out testing on behalf of clients all around the world including product compliance testing, analysis for the UK Environment Agency, investigation of damage complaints and customised analyses for individual companies.

Whilst our consultancy and practical advice have been built around the textile industry, the skills, knowledge base and experience that have been developed over the years are readily transferable to other industry sectors.



A major raw wool scouring facility

Enco are committed to Service, Cost-Effectiveness, Impartiality and Professional Integrity for all our clients.

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Mothproofing

Enco is a specialist laboratory for the testing of mothproofed materials including:

Yarns

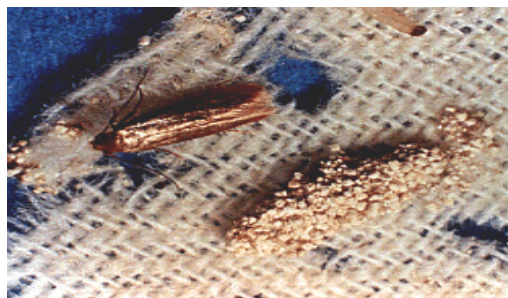
Carpets

Apparel Fabrics

Upholstery Fabrics

Military Apparel

Insect Resistant Nettings



Textile badly damaged by insect attack

Enco can analyse for any of the commonly used mothproofing or insect resist chemicals in any of the above products and express the results in terms of percentage presence of the active ingredient or the formulation or in terms of the protection designations of the Woolmark or the Wools of New Zealand brands. Enco is trusted by companies involved in the use of mothproofing all around the world and was originally involved in the creation of both Woolmark and WONZ designation schemes as well as in the development of the standard methods of active ingredient analysis.

Enco works with the manufacturers and suppliers of mothproofing and insect resist chemicals to ensure that their products meet the expected standards and can be applied safely in terms of the final product and the mill environment.

Damage complaints from insect attack on carpets or apparel can be investigated by Enco with analytical results and comprehensive reports for the public, retailers, suppliers or manufacturers.

The optimisation of mothproofing processes to minimise emissions to sewer has been at the centre of work carried out for the carpet industry and dyehouses which serve it. Significant advances have been made, including –

- Development and implementation of a code of practice and equipment for the safe handling of mothproofing agent in dyehouses.
- A systematic evaluation of the interactions between wastewater residues and application conditions
- Establishing Audit procedures and whole site mass balance techniques for active substances
- Recycling of waste streams and the development of low residue application technologies

Sheep Dip Pesticides

Sheep Dip pesticides are often found at residual levels in raw and scoured wool fibres originating from veterinary treatments to sheep to protect them from attack by insect pests which can distress or even kill the sheep if left untreated.

These chemicals are powerful insecticides and even at low levels they can cause significant environmental damage to the rivers and coastal waters where wool washing waters may be discharged. Wool processors may be regulated quite strictly as to the amount and concentration of these substances that they can discharge to sewer, river or sea.

The pesticides are also often to be found listed as undesirable substances in the criteria for a large number of eco-labels and environmental information labels increasingly found on quality goods made from wool fibre.

Some retailers have listed some of these substances as “banned” from the fibre which they will allow goods they sell to be manufactured from.

Enco can carry out the sophisticated analysis need to determine the concentrations of a large number of the most commonly used sheep dip pesticides in:

Raw Wool

Scoured Wool

Wool Products

Process Liquors

Waste Effluents

Waste Sludges from effluent treatment

Wool greases



Reports indicating the presence or absence of these substances down to part per trillion levels can be produced and used for certificates or the suppliers internal information.

Enco also has a significant amount of data on the pesticide levels in raw and scoured wools grown in, or imported into the UK, and this is available to clients in the form of a database. For example, database has been used to support companies involved in obtaining Permits to Operate from the UK Environment Agency (EA), and has been used by wool processing companies to avoid causing contamination as a result of processing wools from certain origins.

Metals

Heavy metals are found as trace contaminants in a number of textile chemicals and other sorts of metals occur in effluents and in treated products as a result of dyeing.

For processors of wool operating in countries with strict environmental regulation, the presence of heavy metals such as mercury and cadmium in effluents, solid wastes and by-products can be problematic and often processors will have to report to authorities on the concentrations of such metals in the effluents, wastes and by-products they discharge.

Other metals such as copper and chromium occur in effluents, wastes and in treated products as a result of the use of dyestuffs that contain them or auxiliary chemicals that may contain nickel, zirconium, silver or zinc for example. These metals too are often regulated and limits are set upon companies that discharge them into the environment.

Retailers are increasingly aware of trace metals in the products that they sell and of the connotations in the public's mind about products with metals in them. Some retailers have set their own stringent standards on the amounts of metals that products can contain, or choose eco-labelled products that have strict criteria governing metal content.

Enco can measure the metal content of a variety of substances and determine concentrations as low as the part per million range in:

- | | |
|------------------------------|--|
| Wool and wool-blend products | Process chemicals including dyes and auxiliaries |
| Yarns | Fabrics |
| Process liquors | Effluents |
| All types of wastes | |

Atomic Absorption Spectrophotometer for metals analysis



General Analysis

Modern textile processing can involve complex chemical procedures and this in turn can lead to the requirement for a variety of substances to be measured to high accuracy and precision for the purposes of regulation, eco-labelling, internal quality control or for third party enquiries.

Enco has a state of the art chemical analysis laboratory and can use this to provide a large number of different analyses to clients in a range of matrices including:

Raw Materials

Finished Goods

Process waters

Effluents

All forms of wastes



High Pressure Liquid Chromatography Analysis

Examples of analytes commonly requested include:

Settleable Solids	Chloride	Nitrogen
Total Solids	Sulphate	Organic Content
Moisture Content	Nitrate	Formaldehyde
Oil/Grease Content	Turbidity	PCP
Ammonia	Water Hardness	Ash content of wool
Sulphide	pH	VOCs/SVOCs
Chemical Oxygen Demand (COD)		Suspended Solids

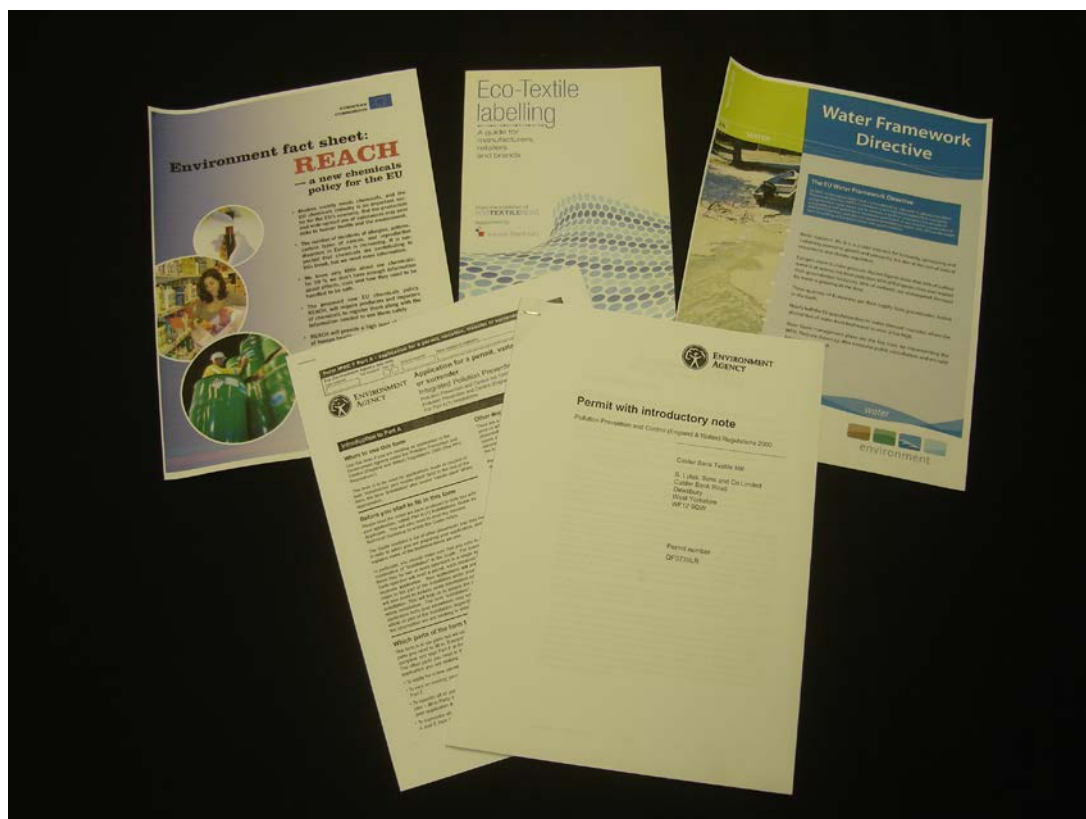
Enco can also arrange physical testing of fibres and fibre mixtures such as fibre diameter (micron), fibre length, colour, wool content of a blend etc. We also have contacts with sister laboratories providing access to information on damage complaints in fabrics and yarns, light and electron microscopy investigations, suitability for fire regulations, fabric wash testing and many other specialist tests. Please contact us for details.

Legislative Services

Legislative requirements for textile companies are increasing all the time both in number and complexity. Often legislation can seem impenetrable and frightening at the same time and Enco has considerable experience in unravelling legislation and ensuring that clients are aware of what does and does not concern them and in how to deal cost-effectively with that which does have an influence.

The paperwork associated with legislative requirements can be time-consuming and often companies may not have the necessary senior level management time to spare on this work.

Our advice service covers the preparation of documentation and advice for IPPC, Local Authority Control, Water Company requirements, Eco-Label requirements, REACH legislation, Water Framework and Environmental Liability Directives etc. Enco also provides advice on how best to achieve compliance with various regulations and engages in negotiations with regulators to help ensure that clients get the most advantageous rulings and limits applied. This work can tie in closely with the Analytical service so that clients can achieve compliance in a timely and orderly way at least cost. Enco has access to a number of different industry and government committees that can be useful in providing news about environmental and industrial legislation matters at an early stage which can be passed on to clients to forewarn them of up-coming changes.



Health & Safety Services

Health and Safety has become a major concern for British companies and the Textile Industry is no exception. Clearly in a diverse industry such as textiles there is always the possibility that employees can be injured or made ill by the operations they carry out if good health and safety practise is lacking.

One of the problems is that it is difficult for companies to judge when work needs to be carried out on improvements or on regular monitoring of health and safety issues

Enco has the experience and qualifications to be able to advise companies on all aspects of their health and safety and can carry out some of the more common testing and monitoring exercises required to maintain a good health and safety record.

Noise Assessments: Enco offers a full Noise Assessment service that covers all the legal requirements of the most recent HSE legislation as well as insurance company demands. Enco can also carry out preliminary environmental noise testing surveys for submission to Local Authorities or for use in neighbourhood monitoring. As part of this service a report is prepared that shows the noise levels experienced by operatives and checks that current provision is suitable to protect them – advice is given on reducing noise levels and on selection of hearing protection is required.

Costs for this service are usually considerably lower than if other commercial consultancies are used

Audiometry testing: Through its links with Madden Consulting Enco offers a professional Audiometric testing service for employees that may be exposed to excessive noise levels. Textile companies have shown interest in such testing as most liability compensation claims in the UK are associated with occupational hearing loss. Audiometry identifies those most at risk allowing companies to protect their staff and minimise chances of liability claims.

Again costs for this service are usually extremely competitive.

Dust Assessments: Enco offers a full Dust Survey service that covers the requirements of the most recent HSE COSHH regulations as well as insurance company demands. The report produced will give results measured against regulatory limits and advise on possible risks to operatives as well as on how to reduce risks and on personal protection equipment.

Spirometry testing: Enco in association with Madden Consulting offers a professional Spirometry testing service for employees that may be exposed to high dust and fume levels or to substances known to effect lung function (such as Reactive Dyestuffs.) Many textile companies use lung sensitising products or have high dust levels in parts of their processes and there are liability compensation claims in the UK each year associated with lung function loss. Spirometry identifies those most at risk allowing companies to protect their staff and minimise chances of liability claims.

Independent Fully Qualified Health & Safety Services: Enco, in association with Madden Consulting, can carry out a full range of Health & Safety audits, Fire Risk Assessments, Workplace Risk Assessments of all sorts, specialised guidance for HSE visits and audits, specialised guidance in the event of accidents or prosecution and Health & Safety training for management and staff.

Process Optimisation

Maximising process efficiency reduces the environmental impact of a wide range of industrial processes; it can also result in major cost savings. As well as offering direct assistance, ENco also undertakes independent in-house research and development. This has resulted in the commercialisation of a number of extremely efficient new systems.

Typical areas of work might include:

The metering of chemicals so that additions are made to exacting standards and waste or under-application is avoided.

The laboratory investigation of raw materials application to determine the correct dosages or the most efficient temperature/pH applications etc.

Comparison trials of differing materials to achieve the same effect or to enhance effects.

Waste Minimisation and Waste Surveys

Many companies generate wastes which could conceivably be re-used back into the process or be re-used off-site by other companies – such wastes can better be described as under-utilised by-products and may in time generate income for a company or, at the very least, attract a much lower cost of disposal.

Enco offers a comprehensive waste minimisation consultancy service to help achieve significant improvements in the reduced use of water, energy and chemicals. Enco can also carry out comprehensive studies of waste generation and disposal so that maximum use can be made of recycling to benefit the company by reduced cost or generating some income.

Effluent Treatment Services

Enco offers practical advice and assistance in the effective treatment of effluent and the efficient management of liquid waste. Many years of experience within the primary processing of textiles has enabled Enco to build up a level of expertise in effluent treatment systems and their efficient running.

Effluent treatment can include the reduction of effluent volumes, reduction of the pollutant load in an effluent, elimination of highly polluting/highly regulated substances from an effluent or the capture of wasted heat from effluent.

Enco can characterise effluents in the laboratory, test small scale laboratory treatments, help to run and support pilot scale trials and from a knowledge of effluent content design and specify effluent treatment systems appropriate to the problem.

Alternatively Enco can advise companies on the suitability of systems already offered to them from other sources.

Certification

Many companies are interested in certificates of analysis to support claims for analytical results; such certificates may be required in turn by their own client companies to support environmental claims.

Other companies may wish to have certain of their products tested with accompanying certificates so that if clients require them in the future they are at hand or if there is an enquiry with respect to product authentication or audit trail requests, results can be adequately supported.

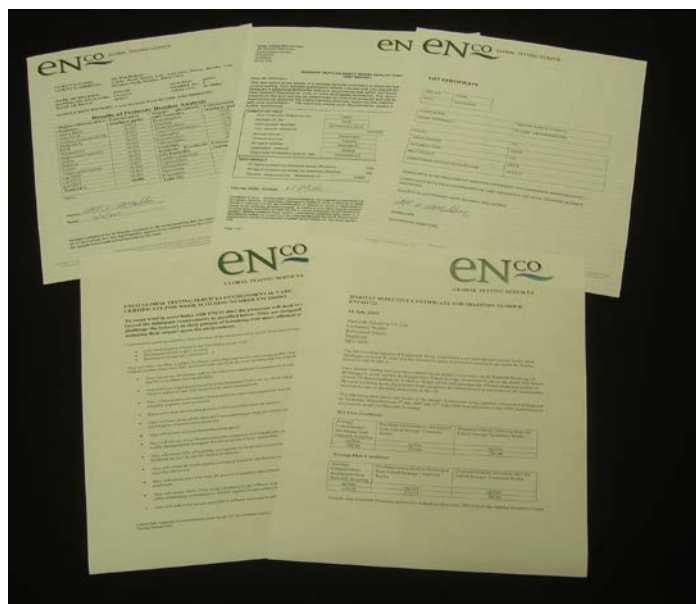
Enco issues a number of certificate types:

Mothproofing results can be issued describing the result in a number of ways including where appropriate the pass level of the product under the Woolmark or WONZ insect resist criteria.

Certificates can be issued for the analysis of pesticides in all types of wool products.

Certificates are available to support claims of environmentally sound production – scouring and blending at Haworth Scouring Company attracts the highest level of the Enco Environmental Care Certificate for Wool Scouring.

Certificates to support general analysis are also available.



A variety of the certificates issued by Enco to help support customer claims

Environmental Network

Enco has a full appreciation of the commercial realities faced by the textile industry and, coupled with an excellent knowledge of UK environmental legislation, this allows Enco to offer a selection of services to groups of companies based upon their common requirements.

By joining the Enco Environmental Network companies can take advantage of common solutions to problems that all may face. Networks offer the ability to obtain services at much cheaper rates than would ordinarily be available and to obtain them before they are offered to individual companies.

The list of services commonly available as above to Network members includes:

Advice and Practical help on Legislative Requirements: Enco offers members an advice service that covers the preparation of documentation and advice for IPPC, Local Authority Control, Water Company requirements, Eco-Label requirements, REACH legislation, Water Framework and Environmental Liability Directives etc. Enco also provides advice to members on how best to achieve compliance with various regulations and engages in negotiations with regulators to help ensure that members get the most advantageous rulings and limits applied. This work ties in closely with the Analytical service so that members can achieve compliance in a timely and orderly way at least cost. Enco is a member of a number of different industry-government committees that can be useful in providing news about environmental and industrial legislation matters at an early stage which can be passed on to members to forewarn them of up-coming changes.

Cost to members: Free (Commercial consultant costs: usually in excess of £50/hour)

Reduced cost Noise Assessments: Enco offers members a full Noise Assessment service that covers all the legal requirements of the most recent HSE legislation as well as insurance company demands.

Cost to members: £300 per site for assessment and report. (Commercial consultant costs: in excess of £1000)

Enco can also carry out preliminary environmental noise testing surveys for submission to Local Authorities.

Cost to members: Free (Commercial consultant costs: in excess of £500)

Reduced cost Audiometry testing: Enco offers a professional Audiometric testing service for employees that may be exposed to excessive noise levels. Textile companies have shown interest in such testing as most liability compensation claims in the UK are associated with occupational hearing loss. Audiometry identifies those most at risk allowing companies to protect their staff and minimise chances of liability claims.

Cost to members: £15 per person tested including full report and recommendations (Commercial consultant costs: in excess of £30 per person tested excluding report – report extra in excess of £200 for above 10 persons tested.)

Analytical Services: From our specialised laboratory facilities, we are able to provide a full chemical analysis service including, where appropriate, reports on the environmental impact of chemicals. These include, amongst many others:

- * Metals
- * Chemical Oxygen Demand (COD)
- * Suspended and Settleable Solids
- * Formaldehyde
- * Oils and Greases
- * Organochlorine, organophosphorus and synthetic pyrethroid pesticides
- * Pentachlorophenol
- * Permethrin

A wider range of chemical and physical tests is also available for textile substrates, effluents and other substances. These include:

- * Fibres, yarns and fabrics
- * Water, process liquors, effluents, leachates and sludges
- * Emissions to atmosphere
- * Soils and solid wastes
- * Chemical raw materials

A number of other physical and chemical tests related to Fibres, Yarns, Floorcoverings, Detergents, Flame and Fire resistance, Colour Fastness, and Fabrics are available on request .

Cost to members: No more than the cost of running more complex test(s) to Enco – simpler tests are carried out for Free. Testing for standard production purposes (essentially QC) are carried out at cost. All results are accompanied by an explanation of their relevance and advice on what to do next where appropriate. Members can confer with Enco on next steps as a result of the investigations or results can be provided in certificate form for submission by the member to customers or legislators. Repeat tests can be carried out to confirm results. Sampling can be carried out by Enco staff and samples collected from the company on request with advice on how best to obtain relevant samples.

This level of service is simply not available from commercial test houses.

Reduced Cost Spirometry testing: Enco in association with Angela Madden (Madden Consulting) offers a professional Spirometry testing service for employees that may be exposed to high dust and fume levels or to substances known to effect lung function (such as Reactive Dyestuffs.) Many textile companies use lung sensitising products or have high dust levels in parts of their processes and there are liability compensation claims in the UK each year associated with lung function loss. Spirometry identifies those most at risk allowing companies to protect their staff and minimise chances of liability claims.

Cost to members: £22.50 per person tested including full report and recommendations (Commercial consultant costs: in excess of £25 - £35 per person tested excluding report – report extra.)

Independent Fully Qualified Health & Safety Services: Enco, in association with Angela Madden (Madden Consulting), can carry out a full range of Health & Safety audits, Fire Risk Assessments, Workplace Risk Assessments of all sorts, specialised guidance for HSE visits and audits, specialised guidance in the event of accidents or prosecution and Health & Safety training for management and staff.

Cost to members: Depends upon the complexity of the work required, however Enco's charges are extremely cheap compared to commercial consultants: an example being Fire Risk Assessment – Enco whole site & report charge = £500, Commercial Consultant whole site & report charge = estimated £2000 or above.

Waste minimisation and Waste surveys: Enco offers a comprehensive waste minimisation consultancy service to help achieve significant improvements in the reduced use of water, energy and chemicals. Enco can also carry out comprehensive studies of waste generation and disposal so that maximum use can be made of recycling to benefit the company by reduced cost or generating some income.

Cost to members: Minimisation surveys are Free. Waste generation surveys – Initial Survey (9 days) £500, follow-up monitoring Free (Commercial consultant costs – service not available unless backed by public money grant.)

Environmental Audits: Enco can carry out comprehensive environmental audits and reports, available for single processes or complete factories.

Cost to members: Free (Commercial consultant costs – estimated minimum of £1000)

Impact Assessments: Enco can carry out research, analysis and assessment of the environmental impact of specific chemicals and processes. An unusual request by Network members but has been offered in the past.

Cost to members: Free (Commercial consultant costs – estimated minimum of £3000)

Effluent Treatment Investigations: Enco offers practical advice and assistance in the effective treatment of effluent and the efficient management of liquid waste to its member companies.

Cost to members: Free (Commercial consultant costs – estimated minimum of £1000)

Process Optimisation Studies: Maximising process efficiency reduces the environmental impact of a wide range of industrial processes; it can also result in major cost savings. As well as offering direct assistance, ENco also undertakes independent in-house research and development. This has resulted in the commercialisation of a number of extremely efficient new systems.

Cost to members: Enco staff time and laboratory effort is Free. (Commercial consultant costs – estimated time costs alone are £50 - £100 per hour.)

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HRH Prince Charles on a recent visit to Enco Laboratory