

The Catalyst

The Official Newsletter of JOIFF

September 2006

www.joiff.com

FROM THE EDITORS

This is the third edition of The Catalyst for 2006. There is a varied mix of articles in this edition including a number of important Press Releases. Included amongst these is detail from JOIFF Member DuPont about their new NOMEX single layer garments and an announcement from JOIFF Member BTTG about their forthcoming Open Day invitation. A visit to see the manikin test facility of BTTG should be of particular interest to UK based JOIFF Members with the recent distribution of the JOIFF draft PPE Guidance Handbook on PPE. We always welcome information for publication in The Catalyst on the operating activities of JOIFF Member Organisations and in this edition, we publish a Press Release from long standing JOIFF Member and stalwart supporter of JOIFF over many years, SembCorp Utilities (UK) Ltd., outlining some of the activities in which they are engaged. There have been recent substantive changes in Fire Safety legislation in the United Kingdom and we thank our colleague Dr. Bob Docherty for his article

outlining the requirements of the new Regulatory Reform Order which will come into effect next month.

We are very pleased to publish the second in the fascinating series of articles on radiation and its relationship with Fire Protection by Margaret McCarthy PhD and our regular features in this edition include the Diary, Members Section and note of New Members during the past 3 months.

We would like to thank our advertisers and our sponsors for their support - without them, we would not be able to function. We encourage our Readers to circulate The Catalyst amongst their colleagues and interested parties and we welcome any comments.

Our policy is to bring you high quality articles on new developments and other happenings in the area of Emergency Services Management. In addition to The Catalyst, current information relevant to Emergency Services Management is posted on the JOIFF website.

ABOUT JOIFF

JOIFF, the Organisation for Emergency Services Management, is a grouping of Organisations represented by their Hazard Manager - or equivalent position - and one nominated Deputy. Full Members of JOIFF are Industrial/Commercial Organisations that have nominated personnel as a Hazard Management Team / Occupational

Firefighters/Emergency Responders and Corporate Members are Organisations which do not comply with the requirements of Full Membership but which nonetheless wish to associate with and support JOIFF.

JOIFF provides a forum for discussion amongst peers, accreditation of job competencies,

information and technical advice. JOIFF welcomes interest from Organisations and persons who wish to become Members - contact the JOIFF Secretariat, details on the back page of The Catalyst.

JOIFF Ltd. Registration number 362542.

MEMBERS' SECTION

JOIFF website

Further progress has been made in upgrading the JOIFF website and earlier this month Members were advised that our website designers ABCom have completed Phase 2 of the upgrade. This Phase of the website upgrade has given a completely new look to and facilitated and speeded up movement around the Members Area, which is a section of the website accessible to Members by using a password.

A proposal will be considered by the Executive for Phase 3 of the upgrade which will cover amongst other things, greater security and quicker and better search facilities on the Shared Learning Archive. The Shared Learning archive was created to ensure that the vast amount of valuable information that is exchanged through the JOIFF Shared Learning email network is not lost. Due to the growing volume of information in the Archive

Disclaimer:

The views and opinions expressed in The Catalyst are not necessarily the views of JOIFF or of its Secretariat, Fulcrum Consultants neither of which are in any way responsible or legally liable for any statements, reports or technical anomalies made by authors in The Catalyst.



it is important that information being sought by a Member can be easily and speedily accessed, which will require a more sophisticated search facility than is on the site already. Members will be kept advised of progress.

The JOIFF Standard

Since JOIFF became formally organised at the beginning of 2001, it has been building a JOIFF Standard which includes Best Industry Practice on a growing number of subjects relevant to emergency response. The keystone of the Standard is JOIFF's accredited Training Programme and detail on the most recent accreditation by the JOIFF Training Standards Committee, a Personal Development Programme for Emergency Response personnel, is

given under Training Notes in this edition of The Catalyst. The JOIFF Standard also includes Guidelines which have been approved by the Membership and which are currently Guidelines for Flow and Pressure Testing of Hydrants and on Fire Extinguishers containing Foam. The latest Guideline that is being considered at the moment by the JOIFF Membership is a comprehensive Guidance Handbook on Personal Protective Equipment to protect against Heat and Flame. This Handbook includes information on Selection, Use, Care and Maintenance of PPE with a large amount of supporting detail and its aim is to provide JOIFF Members who have responsibility for this aspect with the information and background to enable them to make informed decisions on the most suitable type of PPE to provide for their personnel and to give them a greater understanding on how it should be used, cared for and maintained.

NEW MEMBERS

During June, July and August 2006 the Executive of JOIFF were delighted to welcome the following new Members.

Corporate Members

Breathing Equipment Hire Ltd., England, represented by Terry Beaumont, Managing Director and Robert Carlill, Projects Engineer. BEHL as engaged in the design, manufacture, sales and hire of breathing apparatus and breathing air systems, air trailer and air trolleys. They also carry out cylinder testing, face-fit testing and supply breathing air compressors and control panels. They offer plant turnaround and shut down services as well as breathing apparatus servicing.

Nobel Fire Systems Ltd., England, represented by Ian Bartle, Managing Director and Ben Parker, Company Secretary. Nobel Fire Systems Ltd. design, supply, install and commission special risk fire suppression systems covering all classes of fires. Service includes Consultancy and Risk Assessment.

Waterous, England, represented by Peter Ledger, Regional Manager. Waterous are Manufacturer of vehicle mounted fire pumps ranging from 500 l/m to 8,000 l/m. Pumps and CAF systems built to ISO 9001, NFPA and CEN standards. Carry the Industry's longest product warranty of 5 years

We look forward to the involvement of our new and existing Members in the continuing development of JOIFF.

FIRE AND YOUR BUSINESS

by Dr. Bob Docherty QFSM, PhD, C Eng, MEI, FIFireE, FIFSM,

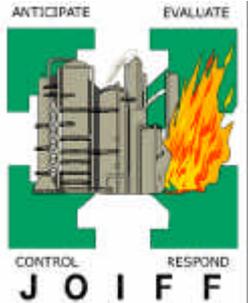
Have you, either as an employer or through a nominated "responsible person", carried out a fire risk assessment under the current United Kingdom (UK) Fire Precautions (Workplace) Regulations 1997 as amended? Do you know that if there are five or more people employed in your workplace, you have to make a written record of that fire risk assessment? Have you taken into account those people who are visitors/customers and use your workplace or premises? If not then you are strongly advised to read on.

"The Fire Precautions (Workplace) Regulations" has been law in the UK since 1997 and means that an employer (maybe you!) or the "responsible person" in your establishment should have already carried out a suitable and sufficient fire risk assessment? You or the nominated responsible person is responsible and

accountable for all of the current fire precautions in your workplace, whether they conform to the legislation or not. This legislation places the responsibility for managing the fire risk onto the employer.

New Fire Safety Legislation in the UK in 2006

The Regulatory Reform (Fire Safety) Order 2005 (RRO) becomes law in the UK in the autumn of 2006. It applies to all premises (except domestic) and requires the employer (maybe also owner/occupier) to carry out a fire risk assessment, provide an emergency plan and appropriate staff training. This piece of legislation will be the benchmark for all fire safety in the UK in the future. Fire Certificates issued under the UK Fire Precautions Act 1971 will no longer be valid when this new legislation takes effect.



The RRO repeals completely the Fire Precautions Act 1971 and members of JOIFF will be especially interested to learn that the Fire Precautions (Special Premises) Regulations 1976 is also revoked (see the tables in Schedule 4 and 5 of Article 53(2) of the RRO). The responsibility for making sure a fire will not put lives at risk will rest with the "responsible person". Defined under the legislation, this will be the employer or a manager and they will have to decide if they or a member of staff have the necessary knowledge and experience to do a suitable and sufficient fire risk assessment or whether they need the help of experts.

- The four main questions people will need to address:
1. Does this Order apply to my premises?
 2. How will I know if I am defined as a responsible person?
 3. What will the RRO require of me if I am the responsible person?
 4. What must I achieve as a result of carrying out my risk assessment?

Taking these in order, it would be fair to say that if your premises are a workplace, then unless they fall within the exceptions described in the second paragraph above, this legislation will almost certainly apply and, in most cases, as the employer you will be the responsible person. However, in some circumstances, e.g. where the employer does not have complete control over the premises, the responsible person can also be defined as the person who does have control, or the owner, or any other person who to any extent exercises control over the premises or building, particularly where they try in any way to prevent or interfere with the employer's attempt to address the fire risk in his premises.

Fire Risk Assessments

Assuming that you are the responsible person, you will be required to undertake an assessment of the risk to people in your premises from fire, in order to determine what action must be taken to comply with the RRO. The risk assessment process is a dynamic one and must be repeated every time any material circumstance changes. Part of the assessment should be an appropriate Emergency Plan to ensure safe actions are taken should a fire occur.

The outcome of your risk assessment should be such as to ensure so far as is reasonably practicable, the safety from fire of employees, other "relevant persons" and the premises themselves. For the purposes of your risk assessment "relevant persons" can be taken as meaning everyone using your premises for any purpose, other than a fire-fighter attending a fire or other emergency.

You must remove or protect against any hazard identified and use specified principles of prevention when undertaking the risk assessment or any remedial work found to be necessary. You must avoid risk wherever possible, evaluate and combat at source

those risks that cannot be avoided, adapt to technical progress, replace the dangerous by less dangerous, develop a coherent overall fire prevention policy, give collective protective measures priority over those for individuals, and give appropriate instructions to staff to safeguard them against fire.

Finally, if you have five or more employees or, there is a licence in force for the premises under an enactment or, where an alterations notice has been issued by the enforcing authority requiring it, the significant findings of the risk assessment and any remedial actions taken or intended, must be recorded. It is also worth remembering that employees also have a duty to take reasonable care for their own safety and that of others and to cooperate with the employer in meeting the requirements of this Order.

The main idea to grasp with fire risk assessment is that it is a universal methodology to be used as a technique/tool for any premises, whatever its size. Although the RRO is a UK based piece of legislation, it is highly likely that it, and the guidance documents that are part of its implementation, will be viewed as industry's best practice in fire safety whether under UK law or not.

Fire Safety Policies

You should also make provision for a structured and cost effective 'Fire Safety Policy' for your premises which will assist in effectively managing and monitoring all fire related matters.

Fire Training for Staff and Management

You will also need fire training for your staff, including all levels of management, tailored to the needs of your premises, thereby ensuring you are compliant with current legislation, the new Regulatory Reform (Fire Safety) Order 2005 and associated regulations.

=====

Editor's note: Dr. Bob Docherty is a chartered engineer and has a First Class BA Honours degree and a PhD for his study on stress and coping in firefighters. He retired from the UK Fire Service in February 2001 after a career spanning over 32 years, the last 10 years of which was as Director of Fire Safety in Strathclyde Fire Brigade. Dr. Bob was International President of the Institution of Fire Engineers for 1999/2000. In 2001 he was awarded the Queen's Fire Service Medal for his contribution to the British Fire Service. Bob is Managing Director of Flamerisk Safety Solutions Ltd. and can be contacted at bob@flamerisk.co.uk



TRAINING FOR RADIATION AND ITS RELATIONSHIP TO FIRE PROTECTION

by Margaret McCarthy Ph. D.

Radiation Definition Photons Part I

In the introduction to a discussion on radiation in the June 2006 of The Catalyst, the reader was asked to formulate a personal definition of the word "radiation" and then the scientific definition of radiation was given as "Radiation is the production of photons and/or particles from a source of radiation". Personal definitions and definitions in popular literature may be different from the above but may be correct in a limited way or simply functional. A functional clear definition of an item is necessary for emergency responses. For this edition's article the first part will be discussed, the photon. The second part about the particle can wait a bit.

The word, photon, is a scientific name for a long list of phenomena that are already well-known. Sunlight is probably the most universal photon group. What does everyone already know about sunlight? Its origin is the sun, and at night there is no direct sunlight. The earth at night provides one large shield. How do we detect sunlight? A biological receptor called the eye detects the radiation. A totally blind person cannot detect the sunlight since the detector for light, the eye, is not functioning properly. A normally sighted person can detect the differences in the energies of the photons in sunlight by observing a rainbow. Humans respond to sunlight in predictable ways. Hats, umbrellas, beach wear, housing designs are responses to living spaces with respect to this large mass of energy bombarding us with the beneficial rays to stimulate plant growth and sometimes roast us. Lack of sunlight is as bad as too much. Optical radiation can be good in limited quantities or post a negative value when in excess or missing. The preceding statement is generally true for all photons.

Observe a rainbow or the effect of placing a prism in a beam of light. The light splits up into colors. Name the colors. Most people will list out: red, orange, yellow, green, blue, indigo, violet, in that order. Children have a mnemonic called ROY G. BIV [a person called Roy G Biv] to remember the order of the visible spectrum. The order of the colors is exactly the same as the energy of each of those things, the photons, that carry the energy of light. One photon of red light has less energy than one photon of violet light. Query: what is the difference between red light and blue light? Answer: energy per photon.



A photon corresponds to a unit of energy $E=h\nu$ in its electromagnetic mode. Photo courtesy of Wikipedia.com

The basic principles of radiation protection from photon irradiation has been stated above. There is a source of radiation, in this case, the sun, a detector for that particular radiation energy, the eye, and a methodology of protection from that source, night, or a sunshade. The sun cannot be shut off. It is a source of radiation that for man is continuously on.

Compare light emission from a flashlight [torch] or a light bulb. One uses both to see in the dark. However, the advantage of these devices is that there is an "off" switch. When a light bulb is out, there is no light leaking around the room, no radiation, and also no electric bill. When photons are produced from electricity or any other man-made device that powers the photons, there is no residual radiation. For a fire fighter situation when a radiation production device like an x-ray machine is off, no radiation. The danger is high voltage particularly if a conductive material like water is part of the fire fighting.

The light spectrum of the colors has something common with x-rays from an x-ray machine. The similarities include belonging to a larger organization called the electromagnetic spectrum [EM]. Any item on the EM spectrum is called a photon. A photon is a packet of energy that travels through space. Those photons that are detectable by our physiology have specific names. Photon groups are used in common English rather than a particular energy.



Let us start with the lower energy of the visible spectrum, red light. There is a point when the eye can no longer see the next part of the spectrum, the infrared [IR] region, but our skin is a receptor that can feel it. Heat lamps are a good example of IR. A little bit of heat from a fireplace is just cozy and wonderful, particularly to primitive man who needed the warmth from a fire in the colder climates. Too much heat, as in the case of building fires, causes heat exhaustion and stroke. The circulatory system of the body simply cannot keep the core temperature low enough. Special suits are designed for the occupational worker which have reflective materials in the fabric to reduce the effect from heat.

Most of you readers will possess a great knowledge of heat and its effects. Just to be sure that the language that is being used here is the same, a slight detour is undertaken. Energy, as learnt by schoolers, can be transported by conduction, convection, and radiation. Remember this phrase? The conduction and the convection require a material or a medium for transportation of this energy. A silver spoon in a hot tea cup will conduct heat to one's hand through the movement of the silver atoms; hot air blown around in a room transports energy by wafts of air through convection currents in the air. Now, the radiation transport is the photon business. The word, heat, can fall into any of the three groups above.



*Heat emanating from a red-hot iron rod.
Photo courtesy of Wikipedia.com*

Photon radiation energy is transported through empty space, a vacuum. Replace the silver spoon with a wooden one and the heat will not be transported. Remove the air from a room and the heat will not be transported. Heat in the form of a photon also arrives from the sun. Heat radiation from the sun through all that empty space can be very warm. In fire fighting all three methods of heat transportation occurs, conduction, convection, and radiation. Whilst fighting a fire in a cold climate, the infrared radiation still must be considered in an

evaluation of best procedure.

Photons travel through empty space or as said in physics, in a vacuum. Each photon has another similar characteristic—they all travel at the same speed, the speed of light. The difference among photons is the energy of each one. So when leaving the sun, the red light and the blue light do not race each other. Neither wins the race. If produced together, they arrive at the same time.

At this place of our photon discussion, a point about language must be made. You now know that the photon is different from sound waves. Sound waves need a medium. Yes, sound waves like photons have wave properties, but so do ocean waves. Waves are fundamental to nature. The fancy name for a quantum of sound is phonon. A particle that will be discussed next time is the proton. Photon, phonon, proton. And guess what? Each of them is used with the word, radiation. When dealing with emergency services, in this case, fires, simple distinct words are better to use than the scientific ones. A word like photon can be garbled or muffled in emergency communication. Part of the teamwork check list should be a vocabulary of common words and how to pronounce them. In addition, what is the agreed-upon definition? The word "heat" has many definitions in slang American English. What is the working definition for your team of those words on the vocabulary list? For now the definition of temperature is ignored.

An important lesson from the definition of "heat" is that, similarly, the word "radiation" has many definitions and implications. The scientific one is the operator in this publication. Your team word may be a better choice for your particular use.

The list of the EM spectrum so far has: IR, visible light, from less energy per photon to higher energy. Going down the spectrum in energy is microwaves, TV [television] waves, radio waves. Question: what detector is used to detect TV waves? Answer: An operational TV plugged into the appropriate electric socket. Sounds silly but the example is forthright. Humans have no biological detectors for TV, and therefore an instrument is needed. The TV can separate out different energy TV photons and tune to a specific channel. The TV photons exist in the ambient environment continuously. If someone wanted to measure in addition to detect the TV waves, then a scientific instrument would be needed. Note the difference between "detecting" radiation and "measuring" radiation.

There are more groups to the low energy part of the EM spectrum than are given here. Laser energy has been ignored. Let us return to the visible or optical



spectrum and observe that the color violet has more energy than the other visible parts. Photons with more energy than violet are termed "ultraviolet" [UV]. A photon of UV has the energy to break some chemical bonds. UV can be used to sterilize against certain bacteria and in repeated exposure at certain doses cause skin cancer or used in limited amounts to assist in the relief of certain skin diseases. The risk versus the benefit of radiation use now becomes biologically important. There is a trade off of the benefit of receiving a dose for a benefit.

hazard. When the light bulb or x-ray machine is off; then there is no radiation production and no residual little rays bouncing around the room. Machines are not radioactive.

Most emergency personnel have a rudimentary knowledge of electricity and their respective units. Electric bills [electric power used] are paid by the kWh [kilowatt-hour]. Fire fighters have modules on electrical safety embedded into their training programs. International travellers know that the USA uses 110VAC [voltage alternating current] for voltage and the UK 240VAC and what happens when the electric razor is plugged into the wrong outlet.

Low Energy NON-IONIZING EM					IONIZING EM high	
ELF	RF	TV	IR	Optical/visible	UV	Ionizing
extremely low frequency	radio waves	microwaves	infrared	ROYGBIV	ultraviolet	x-ray gamma rays cosmic rays

All the radiation discussed to this point is grouped into one part of the EM spectrum called the non-ionizing component. The chart is just a grid and not complete and not drawn in proportion to the energy. It is a rank order so that the reader can relate some photon energies to familiar items. At the high energy end of the spectrum under the listing of ionizing radiation are three photon groups: x-ray, gamma ray, cosmic ray.

It is easy to remember something about the ionizing photons-that the name of the photon is related to the origin. In general X-rays come from x-ray machines; gamma rays come from radioactive sources, and cosmic photon rays come from outer space. Unlike the non-ionizing radiation names, the energy of the photons cannot be categorized into large groups. Unless one knows the energy of the x-ray machine, one does not know the energy of the photons. If a radioactive material emits a gamma ray, and the exact emitter [radionuclide] is known, then the energy is known. More will be discussed when the particle part of radiation is examined. Cosmonauts are evaluated for cosmic ray exposure; fire fighters are not in this category. What little exposure to cosmic radiation exists, it exists as background radiation to everyone and not as an occupational exposure.

To give more depth to the understanding about the EM spectrum is to add the equipment to produce these photons. A parallel between a light bulb and man-made machinery such as television sets, microwave ovens, and x-ray machines can demonstrate safety and respect for the high voltage [kV or MV] and high amperage [mA or A] as being a serious electrical hazard rather than a radiation

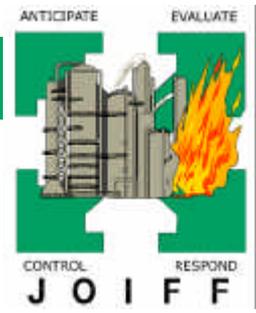
The electric tea kettle in the UK boils the water much more quickly that in the USA. Electrical safety is integral to teaching of radiation safety, and instruction on the aspects of the EM wave can be capitalized upon by balancing the similarities.

A photon is produced with approximately the same energy of the voltage. How many photons depends on how many electrons and that number is related to the current [amperage] of the electrical supply. X-ray machines use milliamps [mA] amounts of current to produce an x-ray image. High voltage transformers can retain the high voltage unless grounded. The hazard is the potential high current and high voltage discharge. X-ray machines do not emit radioactive particles. X-ray machines do not emit x-rays when the power is not engaged.

A cohort hazard from high voltage and high current equipment in a fire emergency can be the gaseous products produced at high temperature. The safety protections relating to non-radioactive airborne products would be covered in other protection venues.

Here are some of the questions from the previous issue that the reader should be able to answer:

1. What is your personal definition of the word, "radiation?"
2. What is ionizing radiation? Is this word the same as "radiation"?
3. If I am fighting a fire at a hospital, will the x-ray machines give me radiation exposure?
4. Is there a hazard from an x-ray machine?



The reader may be able to partially answer these questions:

- 5. Where does all the radiation go?
- 6. Where does all the radiation come from?

Here are some new questions. The reader now knows that detection of the photons can be done only by specific instruments for specific energies.

- 7. What is a photon?
- 8. What is non-ionizing radiation?
- 9. What instrument would you use to detect radio waves?
- 10. What instrument would you use to detect TV waves?
- 11. Why can you not use a radio to detect TV waves?

Conclusion

Governmental regulation on photon radiation usually separates the electromagnetic spectrum into two regulatory components, the non-ionizing and the ionizing. It is the ionizing part [photon Energy > ~10keV] that the public associates the word, "radiation," along with nuclear warfare, mammograms, and cancer. Somehow the non-ionizing part, even if understood, is not seriously addressed. Part of that cavalier attitude rests the lack of extensive biological research related to chronic exposure rather than to acute exposures. Voluntary exposure to ultraviolet rays in tanning booths is dismissed as not important and as of today, perfectly legal in most parts of the USA. Ionizing radiation is highly regulated.

Next Issue

The photons are just a part of the radiation definition. When using this word, be careful on its application, particularly in writing. It has wide latitude when relating to the entire electromagnetic spectrum. Do not include ultrasound, sonar, or whale singing as part of the definition. Next issue, particles.

= = = = =

© 2006. Margaret E McCarthy. All rights reserved. No part of this article may be reproduced, stored in a retrieval system or transmitted in any form by any means without permission in writing.

Editor's Note: Margaret E. McCarthy, Ph.D., is the Chairman of the Physics Department at Springfield Technical Community College in Springfield, Massachusetts, where she teaches physics, specializing in medical physics. She is adjunct faculty in environmental health at the University of Massachusetts / Amherst, teaching graduate courses in biological effects of ionizing radiation. She has been a consultant in operational health physics. Her last sabbatical was an appointment at Victoria University in the Faculty of Engineering in Melbourne, Australia. She has been active in the Health Physics Society on committees appropriate to emergency response and the Western Massachusetts Industrial Hygiene Association and is a plenary emerita of professional societies--AAPM, SNM, and SEG. She can be contacted at mem@schoolph.umass.edu or through the JOIFF Secretariat.

PRESS RELEASE
INTERNATIONAL FIRE FIGHTER MAGAZINE

International Fire Fighter (IFF) Magazine covers the three main sectors of the fire industry, Municipal , Industrial and Firefighter training.

Our readers comprise of departmental fire chiefs, safety officers and rescue teams as well as fire chiefs in the industrial sector which comprises of the offshore and onshore oil and gas industries, shipping, petrochemical and aviation. Virtually every major airport fire chief in the world will receive a copy of International Fire Fighter.

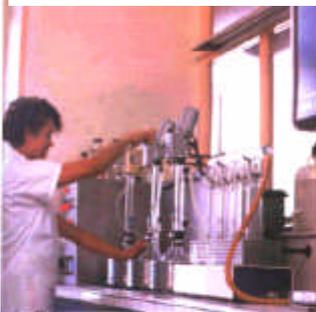
As most firefighters spend most of their time on the training ground than actually fighting fires, IFF has a dedicated training section which runs informative and unbiased articles to assist in the future development of fire safety. International Fire Fighter is a truly international title being read in over 38 different countries and is now considered to be a "must read" for anybody involved in the industry.

Contact: Mark Bathard. Sales & Editorial Manager. International Fire Fighter Magazine e-mail address: mark.bathard@iffmag.com website: www.iffmag.com (T) +44 (0) 1460 2492199



Select a Foam Partner, Not just a supplier

The moment you purchase a foam concentrate from Angus Fire you enter into a partnership with a company that is dedicated to supporting you.



World Leading Innovation

- Proven track-record in research and development
- International team of leading foam experts
- Environmentally responsible technology



Widest Choice, Highest Quality

- Largest foam manufacturer in the world
- Complete range of synthetic and protein-based foams
- Comprehensive UL Listings and LASTFIRE certification

Local Service, Global Reach

- Technical support from global network of distributors
- Proven emergency foam delivery service 24/7 world wide
- Award-winning foam testing service



Angus Fire, Thame Park Road, Thame, Oxfordshire OX9 3RT
Tel: +44 (0) 1844 265000 Fax: +44 (0) 1844 265156 www.angusfire.co.uk

Emergency Hotline +44 (0) 15242 61166





PRESS RELEASE

NOMEX® TAKES THE HEAT OFF CENTRAL SCOTLAND'S FIREFIGHTERS

Single-Layer PPE Garments made of DuPont™ NOMEX® Provide Improved Comfort & Heat Stress Management For Central Scotland Fire & Rescue Service

Heat stress is regarded one of the greatest dangers facing fire fighters today. Following 9/11, the Buildings Disaster Advisory Group (BDAG) undertook an in-depth study to measure the effect on the human body of fighting fires in a range of day-to-day scenarios and in extreme conditions such as high rise blocks. It found that a mix of heavy workload and heat from fires leads to dangerously high levels of heat exhaustion in physically fit firefighters, even in normal firefighting conditions. As well as providing contingency for adequate recovery time and rehydration, the PPE (Personal Protective Equipment) provided to firefighters was also identified as playing a key role in minimizing the inevitable heat risks posed by operating in such an environment. This raises questions about the everyday practicality of traditional turnout gear, with many fire fighters just having the one suite of PPE clothing to cover all scenarios - from training exercises through to road traffic collisions (RTC's).

For over 30 years, DuPont has been working with heat and flame protective apparel and the incorporation of its NOMEX® fibres into garments has delivered exciting and tangible benefits to fire and rescue services looking to offer its front line crews a safe, robust and inherently flame resistant PPE. Garments made of NOMEX® can form a primary barrier in the shape of coveralls, fire-jackets and trousers and also acts as a secondary protective barrier in shirts and underwear. As NOMEX® is actually a fibre, rather than just a top surface coating, it renders the garments resistant to the potentially detrimental effects of repeated laundering, routine wear and tear or even exposure to UV light which can severely impact upon the performance levels of traditional PPE over the course of the garment's life.

Cool & Comfortable

NOMEX® has proved itself particularly suitable for incorporation into PPE for use during a 'wildfire' setting, which by definition includes the tackling of forest fires or blazes in any types of crops, grass or bushes. The lightweight nature of the fibres in a garment form provides comfort, ventilation and range of movement, without compromising levels of protection against falling debris and flying embers etc. In this way, NOMEX® has become a

valuable ally in combating heat stress, allowing body heat to escape but yet still providing protection against external heat and flame. The garments made of NOMEX® can also be layered with other types of PPE to provide the most appropriate levels of protection, or in certain circumstances a 'Wildland Suit' alone may suffice. Unlike urban firefighting, tackling wildfires can sometimes involve covering large distances of unfamiliar terrain on foot to reach the source of the fire, making working in traditional full PPE extremely arduous.

Central Scotland Fire & Rescue Service covers an area of 1,015 square miles, servicing a population of 272,000. Administered from Maddiston, near Falkirk, the Service's Headquarters are only a short journey from the giant petro-chemical complex at Grangemouth, which along with the nearby docks and timber yards means the area contains one of the largest fire risk areas in the country.

The Service's Support Officer, Robert Hamilton, explained "We knew we wanted a workable



*Single-Layer PPE Garments made of DuPont™ NOMEX® Provide
Improved Comfort & Heat Stress Management For Central Scotland
Fire & Rescue Service*



alternative to structural fire fighting gear, which, as everybody knows, is cumbersome, hot and heavy when tackling incidents such as RTCs or wildland fires, or even for routine training exercises. Four years ago, we put out to tender a contract for a new, EN531 compliant, lightweight suit that would improve the comfort, ventilation, ease of movement and therefore safety of fire officers working in hostile environments."

The contract was won by NOMEX® Quality Partner Pioner Fristads and a local protective garment distributor. Robert and his team worked with the companies to produce a single-layer lightweight suit made of NOMEX®. He said, "My colleagues and I specified the garment design based on personal experience of the disadvantages of full PPE in certain situations, and the value chain had the technical garment and materials knowledge required to actually make and supply the suits."

Cost-Effective

Robert also outlined the cost benefits of deploying an alternative to expensive traditional PPE. "By using the lightweight all-in-ones for most everyday scenarios, we have massively reduced the wear and tear on the structural fire fighting gear. Prior to having the suits made, we undertook an audit of all the crews' measurements, to make sure that each suit is a good fit - rather than taking a 'one size for all approach' which really doesn't work for garments which people are wearing day in day out. Being so cost-effective, we can almost adopt a 2 for 1 approach with the new suits, even though they are extremely hard-wearing. Everybody has a spare suit and we can replace them as necessary. To date, we have purchased over 1,250 of the suits and it's acted as a catalyst for other Fire and Rescue Services to also adopt this type of PPE as we are always keen to share our best practice ideas and findings with other Services."

Summarising the crews' attitudes to lightweight suits made of NOMEX®, Robert says "It's hard to get the fire fighters out of them! It's been a winning combination - a wearable, versatile and practical piece of PPE, which still gives good protection levels for many of our call outs. We're currently working with other Fire and Rescue Services within Scotland on a similar concept for a Technical Rescue Suit to be rolled out potentially across the whole of Scotland"

Anti-Static Option

NOMEX® is a particularly appropriate fibre to incorporate within protective clothing intended for use in potential flash fire scenarios, as an anti-static element can significantly reduce the danger from the spark ignition hazard from the fire fighter. This is

significant in circumstances such as RTCs, where flammable fuel vapours may be present, and also in a tinder-dry forest during a hot dry spell.

The makers of NOMEX®, DuPont, work in close partnership with garment manufacturers and end users such as firefighters, motor racing teams, and also the armed services, to develop PPE clothing which gives unbeatable protection, without reducing comfort or the wearer's ability to carry out their job effectively. By sourcing from manufacturers licensed under the DuPont™ NOMEX® Quality Programme, the integrity and performance of the garments is carefully controlled. DuPont has carried out extensive trials regarding the effects of heat stress resulting from exertion, as well as the longevity of the protective properties of NOMEX®.

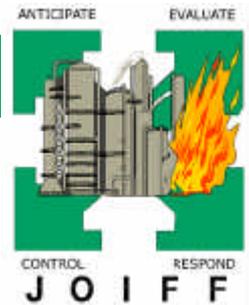
Summary

In a climate where the demands placed upon firefighters is broadening to encompass reacting to terrorist attacks, managing chemical spills and environmental hazards, as well as traditional compartment 'fire fighting', it is important that PPE is versatile enough to keep crews cool under pressure, without compromising protection against flames and moisture. As fire fighting becomes more technically and physically demanding, so must PPE adapt by harnessing new fibre technologies such as NOMEX to improve comfort and safety, whilst delivering long-term value for money.

For more information, please visit www.dpp-europe.com, email Carolyn@mconieagency.com, or call 01483 237230.

The DuPont Oval™, DuPont™, The miracles of science™, PROSHIELD®, TYVEK® and TYCHEM® are registered trademarks or trademarks of DuPont or its affiliates.

DuPont is a science company. Founded in 1802, DuPont puts science to work by creating sustainable solutions essential to a better, safer, healthier life for people everywhere. Operating in more than 70 countries, DuPont offers a wide range of innovative products and services for markets including agriculture, nutrition, electronics, communications, safety and protection, home and construction, transportation and apparel.



PRESS RELEASE

QUALITY COUNTS FOR SEMBCORP EXPERT EMERGENCY RESPONSE TEAM

Detailed planning and preparation combined with speed and quality of response is the key to the effective management of emergencies according to experts from SembCorp Utilities UK. The team, based on Teesside, in the United Kingdom, is one of the leading providers of industrial utilities and services in the country.



Through its Protection business, SembCorp provides a range of services specifically designed to help safeguard customers' people and assets.

Emergency Response

Responsible for the protection of more than £4 billion pounds sterling worth of customer assets, including many high hazard installations, it goes without saying that for the Protection team, speed of response is critically important. Not only does rapid response protect customer's assets, more importantly it can save lives. SembCorp's specialist Protection team prides itself on the speed of its response and is on hand to respond to its customer's requirements within minutes 24 hours a day, 365 days a year.



Widely recognised as having one of the most

effective privately-owned fire and spill protection teams in the world, SembCorp firefighters were called upon to offer expert advice and practical assistance following the massive Buncefield oil storage depot fire in Hemel Hempstead, Hertfordshire in 2005.

With a customer base reading like a 'who's who' of British manufacturing, the team has an excellent track record, established over the past 50 years, in providing top quality 'front line' operational emergency response to clients. Practitioners as well as theorists, the team has been required to respond to a wide range of incidents from minor fires and leaks to major fires, toxic releases, explosions and chemical spills throughout its history.



One of its toughest assignments came in 1995 when - in partnership with county firefighters - the team fought an 11 hour battle to bring a blaze at a massive plastics warehouse at Wilton under control, protecting neighbouring chemical plant and pipelines in the process. Today, using the technology and hardware available to SembCorp, it has been predicted that the same fire could be extinguished within an hour.



More recently the team played a major part in the safe management of a major emergency on one of Teesside's key industrial sites at Billingham. The incident, which involved an explosion and several



The Catalyst

The Official Newsletter of Joiff

fires, was responded to within three minutes by the SembCorp team and the fires extinguished safely and successfully, with no injuries to SembCorp or customer personnel.

learn about emergency planning in an industrial context. The visits provide an invaluable opportunity for people who might be expected to give strategic advice to ministers in a crisis to see how emergencies are managed in a real working environment.

Staff training takes a high priority and the Protection team has a versatile workforce with many of the firefighting force trained in the latest paramedic skills and able to double as ambulance technicians in medical emergency situations.

Emergency Planning

SembCorp's Protection team also embraces a first class emergency preparedness team, supporting clients in delivering the tactical and strategic advice necessary to respond to a wide range of incidents and emergencies. Offering a wide range of auditing, consultancy and training services, SembCorp emergency planners have helped literally hundreds of customers identify appropriate emergency scenarios, develop response plans and train and educate their operational and response teams through a rigorous programme of exercises.



The effectiveness of this training was demonstrated during the recent Billingham incident. Under SembCorp's guidance, the customer had exercised an extremely similar scenario just weeks before the real event. During the exercise, every aspect of the company's emergency plan was tested to the full from managing the health and safety implications of the incident to the numerous media, human resource, environmental and operational issues that arose.

Emergency planning also has one of the finest Major Emergency Control Centres in the UK. Situated in the heart of one of the largest industrial complexes in the UK, it has been designed with the customer in mind. The centre is used for exercises on a weekly basis and is frequently visited by delegations of emergency planners in the public and private sectors.

A delegation from a number of Singapore Government ministries visits Teesside each year to



Environmental Response (Hazmat)

Ensuring a swift and effective on site emergency response is a major challenge. But what happens when products are in transit? How can incidents be contained speedily and safely? SembCorp is one of the UK's leading private providers of a full Hazardous Materials service (HAZMAT) offering a swift and effective response to incidents involving hazardous goods in transit by road, rail, air and sea throughout the UK.

From a central control room based on Teesside the company can provide instant access to critical information about thousands of chemicals and offers a range of assistance services 24 hours a day 365 days a year from simple telephone information on products to specialist technical advice and practical remediation at the scene.

Remediation can involve the full trans-shipment of products safely and speedily if required.

How Protect protects you against fire?

Unmatched performance in fire protection

millenia light[®]

The optimum solution for fire fighters: MILLENIA LIGHT[®] of Ten Cate Protect. This is a breakthrough concerning the fire and heat protection of fire fighters! With MILLENIA LIGHT[®] Ten Cate Protect provides the most durable and comfortable outer shell fabric, when protection is of vital importance.

MILLENIA LIGHT[®]: truly a major milestone for Fire Fighter Gear:

- The lightest outer shell presently in use
- Improved comfort and potential for lower heat stress
- The lightest and most breathable components
- Excellent thermal protection
- Extremely durable in dangerous and demanding work environments



P.O. Box 186 · 7440 AD Nijverdal, the Netherlands · Tel. +31 (0)548 633 922 · Fax +31 (0)548 633 256
tcp@tencate.com · www.TenCateProtect.com



PRESS RELEASE FIRE 2006

Fire Conferences & Exhibitions Limited (FCE) is pleased to announce that it will be holding Fire 2006 on 8-9 November 2006 at the International Centre in Telford.

The speaker programme for this year's conference is now well under way. Top of the bill we have Roy Wilsher, Chief Fire Officer of Hertfordshire Fire and Rescue Service, who will present a keynote speech on the Buncefield Incident. Roy will give a first hand account of an unprecedented multi agency operation involving all of Hertfordshire fire stations, plus the support of 31 Local Authority Fire Services, Fire Service College Instructors and Industrial Fire Brigades, all of whom pulled together to successfully extinguish one of the largest industrial blazes that Europe has seen since the second world war.

Other speakers for 2006 include Max Hood from the DCLG talking about Operational Assurance, Steve Woodfield from West Yorkshire Fire & Rescue talking about National Coordination and Paul Richardson, Deputy at Lancashire Fire & Rescue on Local Area Agreements. We even have a guest speaker slot on the second morning for well known news correspondent, Rageh Omaar

In keeping with last year the conference will be opened by the Minister for Local Government Phil Woolas MP and closed by the Minister for Fire Angela Smith MP and by the CFOA President Phil Toase.

In addition to our high profile speaker programme there will be a number of practical workshops covering areas such as PPE Procurement, Health & Safety within the Fire & Rescue Service, Firelink & Fire Control plus Community Fire Safety. Each of these workshops is designed to give the delegates practical first hand advice that is can be easily digested and implemented within their own organisations.

Finally, the conference will host a Gala Dinner on the evening of Wednesday 8th November. The dinner will include FCE's annual Fire Awards and returning, by popular request, to host the evening will be none other than Radio Two presenter Jeremy Vine.

Further details about FIRE 2006 are available from: www.thefireshow.com. Alternatively please email: Marcus.hall@cfoa.org.uk or telephone: 0781 2983239

IF FIRE BROKE OUT TODAY WOULD YOUR FOAM STOCKS BE UP TO THE JOB?

by Kidde Products / Angus Fire Engineering

While most high quality fire fighting foam concentrates have excellent storage characteristics and last for many years if stored properly, accidental contamination or dilution, or unusually harsh storage conditions may have an adverse effect on fire fighting performance.

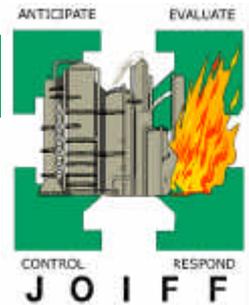
That's why internationally recognised standards recommend that foam stocks should be tested at least annually. For example, NPFA 11, 2005, Section 11.6 states "At least annually, an inspection shall be made of foam concentrates and their tanks or storage containers for evidence of excessive sludging or deterioration. Samples of concentrates shall be sent to the manufacturer or qualified laboratory for quality condition testing". Similarly BS 5306, Section 6.1:1988, Section 3, Clause 11(c) states "Every twelve months test the foam concentrate or solution for changes in constitution or characteristics and the formation of sediment or precipitate".

Foam Testing Service

It is impossible to tell whether a foam concentrate is

of operational quality by smelling it, looking at it in its drum or touching the finished foam. If you want your foam tested properly, then look no further than the award-winning Angus Fire Foam Testing Service. It performs routine foam testing for local authority, industrial and military fire services worldwide. It is operated from an international network of ISO 9000 accredited laboratories in the UK, France, USA, South Africa and Australia. Teams of qualified scientists and technicians in modern, purpose-built laboratories analyse samples of all types of foam to the highest standards.

With knowledge and experience of evaluating foam samples gained over many years, Angus Fire staff are uniquely placed to carefully interpret the results and provide reliable recommendations about the suitability of foam for use in an emergency. Analytical chemistry laboratories that do not specialise in fire fighting foams are unable to offer such specialist expertise. Furthermore, the Foam Testing Service is operated independently of Angus Fire commercial divisions and so its recommendations are wholly



impartial. Comprehensive test reports are kept for future reference and regular reminders for repeat testing issued on request.

Tests Procedures

A full range of testing is provided, from preliminary studies for identifying the category of a foam sample, up to more complex fire tests for assessing its condition and performance capabilities. Any type of foam concentrate or premix solution from any



manufacturer may be tested including high expansion, protein, FluoroProtein, AFFF, FFFP and Alcohol Resistant grades. All tests are carried out according to international standards including NFPA, UL, CEN, BSI and the UK Ministry of Defence. Standard tests carried out include specific gravity, pH, sediment, surface tension, expansion ratio, 25% drainage time, alcohol burn back test, petrol tolerance fire test and spreading coefficient.

Interpreting the results

If a sample fails, then it is because one or more critical properties are unacceptable and immediate replacement is recommended. A "pass with caution" indicates that one or more properties only just meet minimum acceptable standards for the foam category. Replacement should be considered and a repeat test is recommended after six months. A "pass" shows that the sample has passed all the tests for the foam category. A "superior pass, which applies to FluoroProtein foams only, means the sample has demonstrated enhanced stability and fuel tolerance properties.

How to get your foam tested

A one litre sample of foam concentrate in a clean polythene container is required. If new, unused containers are unavailable, then ensure that the containers used are washed properly beforehand with

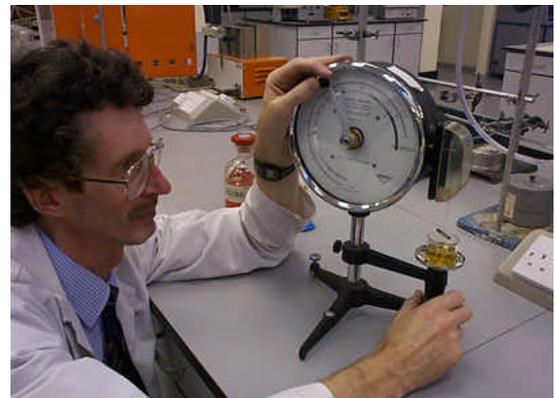
clean water. Do not use containers which have previously contained detergent or oil materials.

Samples of foam concentrate should be representative of the parent stock. A foam drum should be rolled or agitated to produce a homogeneous mix before drawing a sample from the top. For bulk foam storage tanks circulate the contents to produce a homogenous mix before taking a sample. Alternatively draw samples from the top, middle and base. Use a hollow tube to take a sample from the middle. For the base sample use a side-exiting outlet pipe or alternatively run-off about 25 litres of foam first to remove any accumulated sediment. This run-off may be returned to the top of the tank. Several samples may be mixed equally to produce a single composite sample.

Samples should be clearly labelled with origin, foam type and recommended induction rate if known. All samples should be packed securely with a completed Foam Testing Service application form (available from www.angusfire.co.uk) and sent to your local Angus Fire representative.

Field Foam Testing

Angus Fire also offers foam testing on-site to ensure that foam-making equipment is functioning correctly. For example, foam vehicle testing at airports involves



checking the foaming characteristics of aerated foam produced by roof monitors and hand lines, determining the induction accuracy of the proportioning system, measuring the monitor throw, and removing foam concentrate samples for laboratory evaluation. Other typical applications include foam monitor testing at oil refineries, petrochemical plants and offshore platforms.

Angus Fire is part of UTC Fire & Security, a United Technologies Corp. (NYSE:UTX) business unit, which provides fire safety and security solutions to more than one million customers around the world. UTC Fire & Security is headquartered in Connecticut, USA. Download the Angus Fire Foam Testing leaflet today from www.angusfire.co.uk.

DuPont Personal Protection

DuPont™ Tychem® C and Tychem® F coveralls

Lightweight Type 3 protection against a wide range of organic and inorganic chemicals and biological hazards.
 → now available with integrated socks and thumb loops.



Do you need a high quality protective suit for use in the chemical or pharmaceutical industry? Are you seeking reliable protection for hazardous material disposal? Are you exposed to biological hazards? Tychem® C and Tychem® F from DuPont offer you safe and reliable Type 3 protection for a wide range of various applications.

Barrier to

☑ Chemicals

Tychem® C	Tychem® F
Many concentrated inorganic chemicals	Many organic chemicals and highly concentrated inorganic chemicals
Pressure up to 2 bars	Pressure up to 5 bars

☑ Biological hazards

Tychem® C	Tychem® F
Tychem® C and Tychem® F protective clothing materials meet EN 14126: 2003 requirements in the highest performance class.	

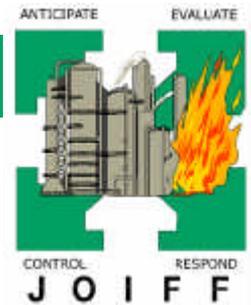
Possible areas of application:

- ☑ Chemical industry
- ☑ Pharmaceutical industry
- ☑ Petroleum and crude oil environments
- ☑ Tank cleaning, inspection and maintenance
- ☑ Agrochemical handling
- ☑ Decommissioning of production plants
- ☑ Decontamination of contaminated land and work sites
- ☑ Disposal of hazardous materials
- ☑ Industrial cleaning and maintenance
- ☑ Military applications
- ☑ Emergency response services, spill clean-up and accident interventions
- ☑ Disease and disaster management
- ☑ Medical applications

The advantages of Tychem® C and Tychem® F

- ☑ Combination of chemical and biological protection in lightweight limited use garment.
- ☑ Excellent protective clothing materials which undergo chemical permeation and mechanical properties testing by independent institutes requested by DuPont and complying with EU Standards.
- ☑ Easy to dispose off since the protective clothing contains no halogen compounds. When contaminated they must be disposed off as for contaminated waste.
- ☑ Reliable and constant quality: each garment is visually checked before leaving production.
- ☑ The garments are designed to provide the right fit and ease of movement for the wearer when completing difficult tasks. Tychem® garments are designed to fit the operator and protect them in most working environments.
- ☑ Comfortable, wearers feel better in them since they are extremely lightweight and very flexible. (only 450g for the Tychem F - size L)
- ☑ Antistatic properties**

DuPont™
Tychem®



PRESS RELEASE

OPEN DAYS AT BTTG - FIRE TECHNOLOGY SERVICES

BTTG Fire Technology Services is a leading UK independent test and Certification body with over 85 years experience of testing textile materials and is issuing an invitation to all interested parties to attend an open day at its custom built facility specialising in the testing of PPE against fire hazards in Altrincham, near Manchester, England on either October 10th or 12th 2006. The open day will feature a test using the EN ISO manikin fire test facility which has been built with support from a number of major sponsors. The facility uniquely features both male and female manikins.



RALPH Male form test manikin in BTTG England

opportunity to meet SOPHIE, our new and unique partner to RALPH and the starting point of our manikin re-development project".



SOPHIE Female form test manikin in BTTG England

Note : Numbers are limited, and therefore it is essential that those wishing to attend book in advance. Contact BTTG at www.bttg.co.uk

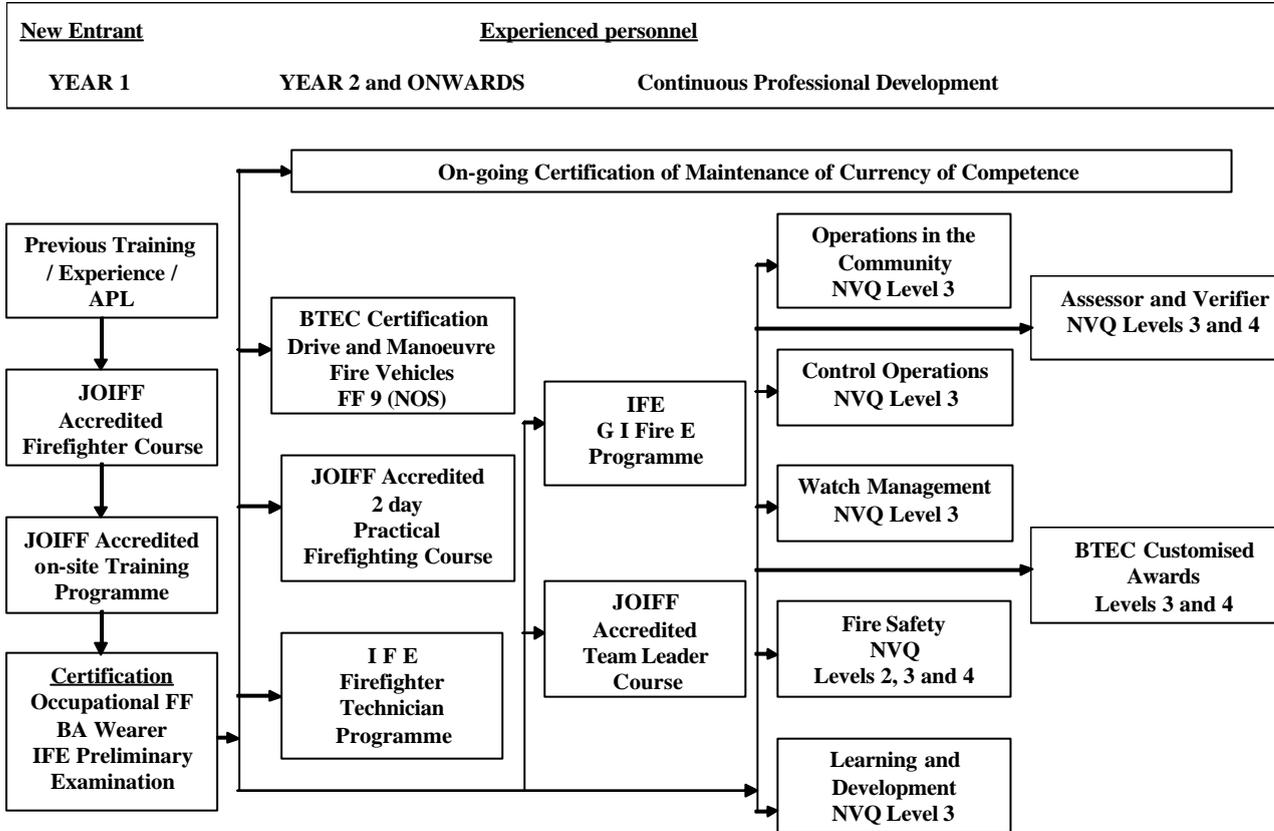
Neil Sorensen Chairman of the British Standards Institution (BSI) Committee for heat and flame protective clothing and who represents BSI at related CEN and ISO standardisation committees is Executive Manager, PPE Certification. Neil says "since the mid 1990s we have been providing clients with PPE fire test data plus CE certification. Our RALPH fire test manikin has contributed considerably to our service over this period but has now been completely re-developed so as to meet the more demanding requirements of the almost finalised EN ISO test method and to provide a more comprehensive prediction of burn injuries."

Paul Eaton, manager of this fire test facility, adds "the real surprise at our open days will be the



JOIFF TRAINING 2006 / 2007

The JOIFF Training Standards Committee have recently approved the accreditation of a Personal Development Programme for Emergency Response personnel



Programme for 2006/7 - JOIFF accredited Training Establishments

JOIFF accredited Course	Dates	Venue
5 day Team Leader	29th Jan - 2nd Feb 2007	Serco IFTC Teesside
	14th - 18th May 2007	Serco IFTC Teesside
	19th - 23rd November 2007	Serco IFTC Teesside
3 day Occupational Firefighter	10th - 12th October 2006	Serco IFTC Teesside
	11th - 13th December 2006	Serco IFTC Teesside
	10th - 12th January 2007	Serco IFTC Teesside
	18th - 20th April 2007	Serco IFTC Teesside
	14th - 16th November 2007	Serco IFTC Teesside
2 day Practical Firefighting	16th - 17th October 2006	Serco IFTC Teesside
	8th - 9th January 2007	Serco IFTC Teesside
	16th - 17th April 2007	Serco IFTC Teesside
	12th - 13th November 2007	Serco IFTC Teesside

For further information about JOIFF accredited on-Site Competency Based Training Programmes, the range of Fire Service NVQs and any other aspect of JOIFF Training, please contact the JOIFF Secretariat.



DIARY OF EVENTS 2006/2007

2006

- Sept 20th - 21st **Dealing With Disasters Conference**, Middlesbrough, England.
Sept 26th **JOIFF Annual General Meeting**, Dublin, Ireland.
Sept 28th **Energy Institute Conference**, Leicestershire England.
- Oct 3rd -5th **IAFPA** (International Aviation Fire Protection Association Conference)
Dublin, Ireland.
- Oct 5th -6th **European Process Safety Centre (EPSC) Conference**,
Human Factors in Process Safety. Schiphol, The Netherlands
- Oct 18th **HazMat 2006 - 2nd Annual Hazmat/CBRN Responders Conference**,
Birmingham, England.
- Nov 8th - 9th **FIRE 2006 Exhibition and Conference**, Telford, Shropshire, England.

2007

- March 20th - 1st April **Fire Engineering Conference and Exhibition**, Cologne, Germany.
- April 16th - 21st **FDIC (The Fire Department Instructors' Conference)**, Indianapolis,
Indiana, USA.
- May 22nd - 24th **FDIC (Fire and Emergency Services Asia)**, Singapore.
- Dec 9th - 13th **FDIC (The Fire Department Instructors' Conference)**, Bahrain.

Please contact the JOIFF Secretariat with details of any event that you think that JOIFF Members might be interested in attending.

*Note: The Catalyst is not responsible for the accuracy of dates and / or venues announced.
This is based on information given to the Editors and is published in good faith.*

For further information about JOIFF accredited on-Site Competency Based Training Programmes, the new range of Fire Service NVQs and any other aspect of JOIFF Training, please contact the JOIFF Secretariat. Contact details below.

JOIFF Secretariat:

Fulcrum Consultants

P.O. Box 10346, Dublin 14, Ireland.

Telephone: + 353 87 242 9675.

Email: fulcrum.consult@iol.ie.

Website: www.fulcrum-consultants.com



Published by ABCom
www.abcom.ie