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EDITORIAL

Harmonization Vs deregulation

In a clear rejection of the European Commission's approach, the European Parliament voted down the proposal for a port services directive on 18 January 2006 by an overwhelming majority of 532 votes to 120. A little background will help to appreciate the import of what happened.

The proposal for a Directive on the liberalization of port work dates back to 2001. One of its most contentious provisions allowed ships to be loaded and unloaded by non-dockers, either ship's crew or personnel hired by shipowners, with all the major safety risks and real danger of social dumping that implies. The proposal was informed by an economic approach which sees internationalization of trade as a non-negotiable priority, however much harm trade and transport growth might do to the environment, health or social justice.

The European Parliament had already thrown out the first version of the text by a slim majority (229 votes against, 209 for and 16 abstentions) on 20 November 2003, a dismissal directly informed by intensive trade union lobbying through demonstrations and strikes. The European Transport Workers' Federation had already been campaigning all-out for over two years.

The new Commission, headed by Mr Barroso, was put in place in 2004. Instead of scrapping such an unpopular proposal, it tried to re-launch it in a slightly rejigged form in a clear symbolic attempt to crush dockworkers' resistance. Sea transport and port employers were not even convinced that the reform was needed. The transport unions' response was swift in coming, as a fresh wave of strikes and demonstrations swept through Europe's main ports.

Nor was it a one-off. On 16 February 2006, just weeks after scuppering the port services directive, Parliament voted through a raft of amendments to the draft Bolkestein Directive, an ultra-free-market proposal that also threatened working conditions, health and safety. The parliamentary vote was taken the day after a 50 000-strong rally in Strasbourg, called by the European Trade Union Confederation.

Both events raise a big political question. After the "no" votes in the referendums on the European Constitution in France and the Netherlands, conservative parties put a

self-serving spin on the outcomes, claiming that the people were rejecting a Europe whose regulations interfered too much in every part of their daily lives. They argued for swingeing cuts in European legislation in various areas. It is an argument that does not stand up. Opposition to reams of red tape does not mean wanting the law of the jungle. What people want in social and environmental matters is stronger Community provisions moving towards a broader harmonization of living and working conditions in Europe.

The European institutions stand at a crossroads. They can take one of two paths. Steady harmonization of conditions in the Union so as to avoid an undercutting war that would push living and working conditions downwards, or more deregulation of markets. Going down the second road would push harmonization of the different national situations down the agenda and put the focus on dismantling existing rules to promote unbridled competition.

Much of how the new Community health and safety programme being prepared for the period 2007-2012 shapes up will depend on the strategy chosen. The Commission will either relaunch the harmonization programme, or opt for voluntary initiatives, non-binding documents or even a relaxation of existing Community rules (spun as a simplification exercise).

The examples of port services and the Bolkestein directive show that the ability of trade unions to explain the issues of intricate legislation, and above all their commitment to energize direct grassroots action, are essential to maintaining an effective balancing force. ■

Marc Sapir,
Director of the Health and Safety Department, ETUI-REHS

HESA NEWSLETTER

THE HEALTH AND SAFETY DEPARTMENT OF THE EUROPEAN TRADE UNION INSTITUTE - RESEARCH, EDUCATION, HEALTH AND SAFETY (ETUI-REHS) aims at promoting high standards of health and safety at the workplace throughout Europe. It succeeds the former European Trade Union Technical Bureau (TUTB), founded in 1989 by the European Trade Union Confederation (ETUC). It provides support and expertise to the ETUC and the Workers' Group of the Advisory Committee on Safety, Hygiene and Health Protection at Work. It is an associate member of the European Committee for Standardization (CEN). It coordinates networks of trade union experts in the fields of standardization (safety of machinery) and chemicals (classification of hazardous substances and setting occupational exposure limits). It also represents the ETUC at the European Agency for Health and Safety in Bilbao.

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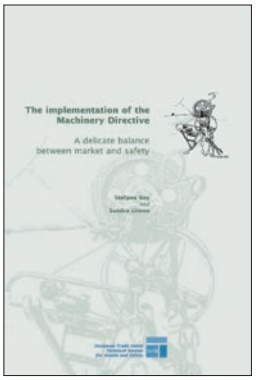
The revision of the Machinery Directive – Part 1

For a detailed analysis of the Machinery Directive:



The implementation of the Machinery Directive
A delicate balance between market and safety
Stefano Boy and Sandra Limou

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Introduction

The ETUI-REHS has been closely monitoring the revision of the Machinery Directive, the five-year review of which has demonstrated the difficulties of striking a balance between market needs and protecting machinery operators' health and safety. The revision has also raised fundamental questions about what progress technology has achieved towards safer equipment since the Machinery Directive came fully into force. We take the view that progress in safety through design cannot be achieved without an iterative mechanism where the work environment's reactions to manufacturers' chosen design solutions are brought back to source and used to devise safer equipment. This argument will be developed in a two-part article: the first part looks at the main steps of the revision and sets the background for the second, which will focus on selected changes to the existing text of the consolidated Directive 98/37/EC. This second part will be published in the next *HESA Newsletter.*

The revision process

Now that the European Commission has endorsed[1] the amendments proposed by the European Parliament in the second reading of the Common Position adopted by the Council, the new Machinery Directive will be checked by staff legal linguists and soon thereafter adopted by the Council.

Work on overhauling the Machinery Directive started five years ago, in January 2001, when the European Commission transmitted to the Council and European Parliament a revision proposal[2] largely intended to simplify implementation of the legislation in line with the conclusions of the 1994 Molitor Report[3]. A month later, the President of Parliament referred the proposal to the Committee on Legal Affairs and the Internal Market as the lead committee, and to the Employment and Social Affairs, Environment, the Public Health and Consumer Policy, and the Industry, External Trade, Research and Energy Committees for their opinions (the latter finally deciding to forego giving an opinion).

Reactions to the Commission proposal varied. The Environment, Public Health and Consumer Policy Committee's opinion welcomed the Commission's intention to give more importance to CE marking, and called attention to the need to deal with equipment used in fairgrounds and amusement parks, either by bringing it within the scope of the "new" Machinery Directive, or by another directive. It also proposed asking Member States to report machinery-related accidents, and requiring manufacturers to submit an annual report to the Member States on machinery safety faults. The Economic and Social Committee echoed the concerns on fairground and amusement park equipment, was critical of the Commission's timing in revising the directive so relatively soon after it came into force, and felt the Commission proposal was unlikely to achieve the desired simplification. The Employment and Social Affairs Committee's opinion struck the same general tone.

In its reaction[4] to the Commission proposal, the ETUI-REHS welcomed the emphasis given to such essential concepts as CE marking, cooperation between national competent authorities, risk assessment, non-professional operators' needs, foreseeable abnormal situations, and instructions, as well as the aim of clarifying provisions concerning quasi-machinery. The introduction of Full Quality Assurance as a possible alternative to EC type-examination of Annex IV machinery was a stumbling block, however, as we do not believe that product quality necessarily implies the highest safety and health standards.

In its first reading – on July 2002 – Parliament made sixty-eight amendments. The Commission's amended proposal presented at the beginning of 2003 accepted part or all of nearly half of these, which were aimed at clarifying the scope of the directive, improving the definition of machinery, simplifying the application of CE marking, presenting a better representation of the lifecycle of machinery, and improving the provisions on the designation of notified bodies. Among the amendments accepted was the possibility of self-certifying Annex IV machinery constructed on the basis of harmonised standards covering all applicable Essential Health and Safety Requirements. Forty amendments in all were rejected, most considered by the Commission as being either outside the scope of the Machinery Directive or adding nothing to the initial proposal. A number of amendments which were not accepted by the Commission nevertheless raised interesting issues: how to draw lessons from the safety level of old machinery, the need to revisit some aspects of the New Approach[5], and the need to establish European databases on the fulfilment of health and safety requirements for machinery, among others. With this last amendment – included as Recital No. 27 in EP legislative resolution P5_TA(2002)0362 – Parliament also meant to help machinery purchasers make better choices among equipment on the market. The Recital went so far as to ask the Commission to authorise CEN to establish and maintain such machinery databases.

The Council reached a political agreement on the Commission's amended proposal in September 2004. Prior to that, the ETUI-REHS had occasion to put its views in a letter addressed to the Chair of the

[1] COM(2006) 58 final – 2001/0004 (COD).
[2] COM(2000) 899 final – 2001/0004 (COD).
[3] See: "Revision of the Machinery Directive", *TUTB Newsletter*, No. 17, June 2001, p. 5-11. Downloadable from: http://hesa.etui-rehs.org > Newsletter.
[4] See: "Revision of the Machinery Directive", *op. cit.*
[5] The introduction of a system of categories of risk and monitoring in connection with market surveillance, the possibility of addressing safety aspects of existing installations.

European Council Working Group for the Machinery Directive. We stressed the urgent need to set a new framework for pooling expertise on machinery safety on the basis of data, tools and procedures. Opening up the "machinery system" to a wider involvement of people and organisations would achieve several objectives: the revision of Annex IV; the improvement of harmonised standards; a better chance for purchasers to make sound decisions when buying equipment; the possibility of avoiding safeguard clauses; closer contact between designers and users to dispel designers' misconceptions about users and their intentions, and the working environment. The ETUI-REHS' reactions to the text of the Council's political agreement were elaborated on in the *TUTB Newsletter*[6].

In July 2005 – after three years of debate in the Council's preparatory bodies – the Council reached a common position on the Commission's amended proposal, which broadly reflected the Commission's own reactions to the EP's 1st reading. The Commission welcomed the common position, which introduced a number of improvements to the initial proposal, and attached two interesting declarations to the common position addressing the revision of the New Approach – one on CE marking, the other on the presumption of conformity conferred by harmonised standards. Here, the Commission pledged to provide potential users of relevant standards with clear information about the relationship between its clauses and the Machinery Directive's essential health and safety requirements. The Commission went on to say that it intended to implement such information requirements for all New Approach Directives. It is interesting to note on this, that during the negotiations in Council some Member States suggested adding a legislative requirement on the transparency of the relationship between standards specifications and the Annex I Essential Health and Safety Requirements (the so-called Annex Z in C-type standards).

The 2nd reading in the European Parliament – whose opinion was delivered on 15 December 2005 – resulted in 9 amendments, chief among them further clarification of CE marking, putting electric motors outside the scope of the directive, the need to improve market surveillance, dropping "scrapping" as a manufacturer's responsibility, emphasizing the confidentiality of information processed and exchanged by stakeholders, and the requirement to review technical files when assessing the Full Quality Assurance operated by manufacturers.

The parliamentary committee work addressed other sensitive issues. On the safeguard clause, some MEPs wanted a procedure to ensure that:

- measures taken against one dangerous machine were applied horizontally across all machinery of the same type presenting the same dangerous design features;
- when the Commission confirmed the non-conformity of a machine, measures taken by one Member State would automatically apply in all Member States. The thinking behind this was to prevent machinery banned in one Member State from circulating freely in Member States where restrictive measures had not yet been taken.

For Annex IV machinery, some MEPs wanted the Full Quality Assurance option for dangerous machinery not or only partly manufactured on the basis of harmonised standards dropped unless notified bodies were able on request to assess a model of the machine, plus the documentation of the quality system behind its design and construction. Others were more flexible, wanting to give notified bodies full discretion to decide whether an Annex IV machine under full quality assurance would be submitted to the EC-type examination. What lay behind this was the alleged lack of clarity of Annex X in describing the role played by notified bodies in the full quality assurance assessment and monitoring, two matters where Annex X was thought by some to be too unspecific. Another amendment on the General Principles of Annex I called for manufacturers to have to take into account not only the state of the art, but also economic proportionality, when designing and constructing machinery.

Some preliminary considerations

A full quality assurance procedure, the need for a European machinery database, the presumption of conformity conferred by harmonised standards, and the aim of helping machinery purchasers are just some of many issues addressed in the revision process. These will be considered in more detail in the second part of this article, along with other sensitive issues: the implications of the Annex I changes on standardisation, how the Commission means to manage the specific measures to deal with potentially dangerous machines, how to revise the list of particularly hazardous machinery (Annex IV), partly completed machinery, and how the Commission means to implement Article 21 on the dissemination of information on implementation of the Machinery Directive.

All these matters will be examined to see whether the objectives and expectations of the revision have been delivered. What the Commission says will be looked at against the initial proposal's aim of clarifying the definition of various concepts and certain other aspects, and better ensuring the uniform application of the Machinery Directive, as well as the expectations of those who viewed the revision process as a unique opportunity to take account of the experience gained in the practical application of the amended Directive 89/392/EEC. ■

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[6] See: "New Machinery Directive soon on track?", *TUTB Newsletter*, No. 26, December 2004, p. 14-16. Downloadable from http://hesa.etui-rehs.org > Newsletter.

Market supervision: two Finnish cases in the ECJ

On 17 November 1998, Raine Pentti Pöyry suffered a serious work injury while working on a press brake. He was helping a workmate change the blades on a machine that had been stopped with the emergency stop button. During the operation, Mr Pöyry inadvertently pressed a foot pedal which caused a rapid compressing movement, severing all eight fingers. The press brake was produced by the French firm Amada, part of a multinational group producing hi-tech sheet metal working equipment.

On 22 March 2000, a mobile home fell off a car lift when the interlocking guard on the loading arms gave way under a sideways shift. The vehicle weighed less than the maximum permitted load for the car lift. Fortunately, no-one was injured. The car lift had been made by an Italian firm, AGM-COS.MET.

These two accidents which occurred in Finland have a certain number of points in common. They were also behind the first references for preliminary rulings made to the Court of Justice of the European Communities on key aspects of the Machinery Directive[1].

CE-marked, but still dangerous

The facts common to both are firstly, that both items of work equipment were CE-marked, which is meant to certify that they satisfy the Machinery Directive's essential safety requirements. In both cases, the equipment had been imported from other countries within the European single market. In both cases, the CE marking was affixed after certification by a notified body. In the Yonemoto case – named from the manager of Ama Prom[2] – the notified body which certified the machine was AIF/S (Association des industriels de France/services[3]); in the AGM-COS.MET case, it was an Italian notified body, ICEPI (Istituto Certificazione Europea Prodotti Industriali[4]). In both cases, the after-the-event investigations found that the equipment concerned did not satisfy the essential safety requirements and could cause serious accidents.

In the press brake case, the Finnish authorities took action after the accident, bringing prosecutions against both the employer and the importer, Mr Yonemoto. In the car lift incident, the Finnish authorities investigated the incident. A labour inspector, Mr Lehtinen, found the equipment not to be compliant with the Machinery Directive's essential requirements. The producer, AGM-COS.MET, admitted the fact and took steps to avoid a repetition of the incident, in particular by advising Finnish purchasers to apply a much lower maximum permitted load. Mr Lehtinen commented on the affair on several occasions at public meetings, on television and in the press. His superiors disowned his views and took him off the case.

What the two cases have in common in law is that the rules on free movement of goods were relied on to restrict the steps a State can take to supervise the market in work equipment. In the first case, Mr Yonemoto argued that a criminal conviction would breach the principle of free movement of goods as implemented by the Machinery Directive. In the second case, the car lift producer claimed substantial damages on the grounds that the Finnish State and Mr Lehtinen were responsible for its lost sales in Finland in the period after the incident.

This article cannot go into all aspects of both cases. The second in particular is complicated by the dispute between Mr Lehtinen and his superiors. The allocation of potential liability between Mr Lehtinen personally and the Finnish State raises big issues that are not directly relevant to the Machinery Directive. A more detailed look will be taken at these in a future issue of the *Newsletter* when the Court of Justice has handed down its ruling in the AGM-COS.MET case.

Contradictions within the Machinery Directive

The political import of these two cases is not to be under-rated. In both, the issue is what national public authorities do to supervise the market and impose penalties for breaches of the rules. An understanding of this issue needs a brief recap of what the Machinery Directive says and does[5].

The Machinery Directive aims to create a single market for work equipment in the European Union. It lays down essential safety requirements so that workers' safety does not pay for the free movement of equipment. All equipment put on the market must be CE-marked to certify its conformity to the directive's requirements. In most cases, the CE mark means that the machinery has self-certified by the manufacturer. The potentially most dangerous equipment must be certified by a notified body before it can be CE-marked.

The Machinery Directive harmonises the rules on the level of safety required, but leaves States responsibility for supervising and if need be enforcing compliance with those rules. The only harmonization measure laid down is on the procedure for prohibiting machinery. Other than that, States are required

[1] Originally adopted in 1989, repeatedly amended and eventually replaced by directive 98/37. It is currently undergoing a further revision. See the article by Stefano Boy in this *Newsletter*.

[2] There are close links between the Amada group which produced the machine and Ama Prom, which seems to be a marketing branch in Finland and certain neighbouring countries (Lithuania and Latvia).

[3] In 2002, AIFF/S became Norisko Equipements.

[4] ICEPI's certification had previously been questioned when France banned certain presses for the cold working of metals (order of 9 June 1999, French Official Gazette, 16 September 1999).

[5] For a detailed analysis of the Machinery Directive, see: Stefano Boy and Sandra Limou, *The implementation of the Machinery Directive. A delicate balance between market and safety*, Brussels, TUTB, 2003.

to enforce compliance with the directive, but are free to determine how to achieve it.

Looked at critically, contradictory forces can be seen at work in the practical implementation of the directive. It removes borders inside the Union to create a single market for work equipment, but its effectiveness depends on the national market supervision policies put in place. Nationally-based market supervision to some extent places obstacles and restrictions on that freedom of movement. In a way, the non-uniform, national character of supervision restores borders not for protectionist purposes, but to ensure workers' safety.

The directive also vests private players (manufacturers for self-certification, notified bodies for certification) with a key role: that of certifying compliance with the essential safety requirements. The notified bodies themselves form a competitive market: any manufacturer can apply to whichever body he chooses, so notified bodies may be inclined to be more accommodating in order not to lose custom. So far, there is only one known case of notified body having lost its status for certifying equipment that was not compliant with the directive's requirements, although market supervision reveals this to be a fairly common occurrence.

If successful, the proceedings brought in the Court of Justice by manufacturers and importers could upset the delicate balance in the system. A one-sided, purely free-trade interpretation of the directive could weaken State intervention to ensure workers' safety.

The Yonemoto case: an ambiguous ruling

The Court has already given its ruling in the Yonemoto case. The judgement delivered on 8 September 2005 is not completely clear-cut. For one thing, it holds that the importer has no duty to ensure that the equipment complies with the essential safety requirements (paragraph 46 of the judgement). If "ensure" means the importer having to take all the steps that the manufacturer should have taken (risk assessment, reference to a notified body if need be, etc), the Court's interpretation can be broadly endorsed. But it is also in the nature of things that Member States should be able to determine what responsibility an importer may have for placing dangerous equipment on the market and impose criminal penalties for it. The Court accepts this only to a very small extent. The concrete examples it gives go no further than checking the instructions for use and for the presence of CE-marking. The Court also recognises that States may require co-operation from importers in carrying out market surveillance. Finally, the judgement does not specify what can reasonably be expected from an importer before specific surveillance measures are taken.

I would argue that there is an obligation to ensure that machinery complies with the safety requirements, having regard to the responsibilities of a professional distributor in the supply chain. In the practical instance of the Yonemoto case, the investigation revealed that the control panel pictured in the instructions for use was not the same as the actual control panel on the machine. It is normally a professional distributor's job to check this kind of thing. On the other hand, the failings with the emergency stop button were probably more difficult to detect in the normal course of a distributor's activity.

Advocate General Geelhoed's Opinion was much more clearly worded than the Court's judgement in this respect. In paragraph 40 of his Opinion, he argued that the smooth functioning of the system laid down by directive 98/37 entails a general duty of care[6], not only by the machinery manufacturers whose specific obligations were spelled out in the directive and its annexes, but also for the downstream economic operators in the distribution chain, such as the importers, distributors and end-users of the machinery. They, he said, must ascertain that the upstream operators in the chain have properly discharged the obligations that the directive imposes on them. Should they fail in that duty of care, the consequences of the defects or errors committed upstream may be passed on down to the final stage of use of the machinery with all the resulting risks for employees' health and safety. On this point, he opined, specific obligations may be imposed in the national legal system on those who import CE-marked machinery into national territory and the other operators in the distribution chain. A professional distributor's duty of care goes much further that the simple examples cited in the Court's judgement (existence of translated instructions for use).

It is still too early to gauge the effects of this judgement. Most Member States' legal systems provide penalties for all operators in the distribution chain, from the machinery producer to the employer. In practise, most States do not go as far back as the producer, if he is established in the territory of another Member State for a variety of reasons, including the difficulty of establishing sound administrative and legal co-operation; insufficient attention to the necessary transnational aspect of market surveillance; under-resourcing of market surveillance bodies, etc.

The AGM-COS.MET case: a serious threat to labour inspectors

AGM-COS.MET could have been a fairly straightforward, landmark case. It has taken a complicated and disturbing turn, mainly from the attitude of senior Finnish Social Affairs and Health Ministry officials.

That the car lift produced by AGM-COS.MET and certified by ICEPI was a dangerous piece of equipment that was not in conformity with the Machinery

[6] The Advocate General's analysis reflects that advanced by the Commission in its written observations on the case submitted in May 2004.

Directive's essential safety requirements is not disputed. The measures taken by the labour inspector, Mr Lehtinen, were arguably proportionate to the danger and characteristics of the market. These car lifts are used in garages and are likely to be sold on from one garage to another. Using information channels is both the quickest way to reach the many potential users, and to make business aware of the need to be more watchful over the safety of machinery.

The claim for damages brought by AGM-COS.MET for lost earnings in Finland and injury to reputation is somewhat grotesque. For AGM-COS.MET to win would set a precedent with which to browbeat labour inspectors. How can market supervision be properly conducted under the cosh of potential liability for hundreds of thousands of euros in damages wielded by firms who may have lost business?

There are two complicating factors:

- Mr Lehtinen's superiors in the Finnish Social Affairs and Health Ministry disowned him and took him off the case. Notwithstanding this treatment, the Ministry rightly stuck to the assessment that the machine was not in conformity with the safety requirements at the time of Mr Lehtinen's investigation.
- The Finnish authorities did not play fair by other States or the Commission. Despite having found that non-compliant machinery was moving around the Community market, they merely took corrective measures for the Finnish market. Such blinkered nationalism is a dangerous approach to the role of market surveillance, which forces each country to re-do checks already performed elsewhere. Given the parlous under-resourcing of market supervision, the result of national authorities failing to co-operate would be to allow different degrees of movement for dangerous equipment depending on the level of supervision exercised by each country.

A rule-bound and irresponsible interpretation of the directive

Without getting bogged down in the various issues that this case gives rise to, one thing to note is the very free-market interpretation placed on the directive in Advocate General Kokott's Opinion.

While rightly noting that the car lift concerned did not fulfil the directive's safety requirements, she goes on to argue that such equipment should continue to benefit from the presumption of conformity while ever no formal prohibition proceedings have been commenced. This "by the book" approach completely ignores the real world of market supervision. Banning a machine is regarded in all Member States as an extreme measure, and involves a fairly slow-moving procedure. In all cases where less extreme measures can be taken, they are preferred. Generally, the national authorities contact the producer, propose changes to the machine or possibly a downgrading (e.g., reducing the maximum load). They inform users and act to see that corrective measures are taken. Machinery is prohibited only in very exceptional circumstances, when market supervision activities daily turn up large numbers of equipment that do not fulfill all the essential requirements.

The Advocate General's big mistake is to see the Machinery Directive as an "exhaustive harmonization" measure in the matter (paragraph 71 of the Opinion), when there are in fact two levels of harmonization in the directive. Certainly, there is total harmonization of the safety requirements that work equipment must meet: the Member States cannot impose other rules than those in the directive. But where market supervision measures are concerned, there is only "mini-harmonization" of the procedures for banning machinery; no other aspect of market supervision is subjected to any for of harmonization measure (information provided to purchasers and public opinion, types of check performed, requirements for corrective action, downgrading, penalties, etc.). Both the legal rules and practical carrying out of market supervision remain very largely national matters. Regrettable, but true.

The Court has yet to deliver its ruling. Concurring with Advocate General's Kokott's Opinion could well strip the single market in work equipment of most of the surveillance mechanisms it currently has. ■

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Case references:
Yonemoto, Case C-40/04, Advocate General's Opinion delivered on 10 March 2005, Court Judgement of 8 September 2005.
AGM-COS.MET, Case C-470/03, Advocate General's Opinion delivered on 17 November 2005.

REACH: first reading verdict – "could do better"

The European Parliament and Council are still wrangling over the future REACH regulation (Registration, Evaluation, Authorisation of Chemicals). The two institutions have been working in parallel since October 2003 on a draft text formally adopted by the European Commission. They have to agree on the final version through a co-decision procedure.

REACH will make sweeping changes to current European legislation on the use and marketing of chemicals. The reform will force producers to register chemicals that they manufacture or import in quantities of one tonne or more a year to show that they can be used safely. Also, producers of substances that are CMR[1] or likely to accumulate irreversibly in the body and environment[2] must obtain an authorisation for each use regardless of its production volume.

Rarely has any legislature been subjected to such intensive industry lobbying against proposed law reforms[3]. MEPs and Member State governments were strong-armed into radically trimming down produ-cers' REACH obligations as the process went on.

A curate's egg of a compromise

However, a major milestone was passed on 17 November 2005, when MEPs passed a fairly heavily amended first reading text by a majority of 407 votes for, 154 against and 41 abstentions as a result of an eleventh-hour political compromise between the big three groups in the European Parliament (conservatives, socialists and liberals). Compared to the European Commission's original proposal, the text significantly reduces the information producers have to supply to register almost all the 30 000 substances covered by REACH.

Even so, the first reading text does keep intact some major advances secured earlier by the Environment Committee, Parliament's lead scrutiny body on the draft, like the mandatory substitution of the most dangerous substances, chemical safety reports for all substances covered by REACH, and the "duty of care" for all substances produced or imported into Europe.

Less than a month on, the Extraordinary Competitiveness Council of 13 December 2005 found the Member States striking their own political agreement on the text. It closely mirrors the amendments adopted by Parliament on Registration and Evaluation, but diverges on Authorisation.

Apart from slashing the amount of information that manufacturers will have to supply in the registration phase, both Parliament and Council adopted the OSOR (One Substance, One Registration) principle requiring different producers of the same substance to share the information they have in order to submit a single registration dossier.

Both the institutions beefed up the role of the European Chemicals Agency that will be set up to manage the new REACH system in the evaluation phase of dossiers and substances.

In the authorisation phase, by contrast, Council has thrown out the principle adopted by Parliament that an authorisation for a substance of very high concern will always be refused where a safer alternative is available (mandatory substitution principle) in favour of keeping a system where an authorisation can be granted if the applicant can show that the risks related to the use of the substance are "adequately controlled". The Council nevertheless ruled out granting authorisations on this basis for PBT and vPvB substances. It has also gone with the principle that authorisations granted should be reviewed, but after a period set case-by-case rather than after five years in every case as decided by Parliament.

These different approaches by Parliament and Council to the implementation of the substitution principle in the authorisation phase will be central to the debates in the second reading, scheduled to take place on 24 October 2006.

Evening up the cost-benefit ratio

The European Trade Union Confederation (ETUC) believes that the REACH project has passed major milestones in Parliament and Council, given the fears that powerful industry pressures could have led to the reform simply being quietly scrapped. This first reading result means that the reform will see the light of day, and will set Europe firmly on the road to an economy that takes greater account of the health and environmental impacts of the chemicals industry.

However, the ETUC believes that both the text adopted by Parliament and that negotiated by the governments could have achieved a better balance between economic demands and health protection for workers, citizens and the environment.

[1] Carcinogen, mutagen, reprotoxic.
[2] PBT (persistent, bio-accumulative and toxic) and vPvB (very persistent, very bio-accumulative toxins).
[3] See: "REACH: industry's meltdown predictions groundless, but fierce lobbying goes on..." *Hesa Newsletter*, No. 27, June 2005, p. 5-6. Downloadable from http://hesa.etui-rehs.org > Newsletter.

The ETUC's key demands for the second reading of REACH

1. Application of the mandatory substitution principle in the authorisation phase.
2. More exacting information requirements for the registration of low volume substances (between 1 and 10 tpa) and chemical safety reports for all substances covered by REACH.
3. Adoption of a "duty of care" for all chemicals produced or imported into Europe.
4. A quality assurance mechanism for the information provided by manufacturers and importers.
5. More coherence between the REACH obligations and those in the health and safety at work directives.
6. Introduction of measures to help SMEs discharge their REACH obligations.

One plus point is that both texts confirm the key principle of reversing the burden of proof from the competent authorities onto producers for substances covered by the reform. In future, industrialists will have to demonstrate that their substances can be manufactured and used safely before they can put them on the market.

The ETUC also welcomes the adoption of the OSOR system, which should help cut the costs of registration for small and medium-sized firms that manufacture or import chemicals.

However, the ETUC regrets the new concessions granted by Parliament and Council to the chemical industry. Waste, for example, no longer comes within the reform, and a large number of chemicals produced in quantities of more than one but under ten tonnes a year will fall outside the original testing safety net.

But the potential benefits of REACH to workers are closely tied to the information that the system will generate on the hazards of chemicals as well as how to manage the risks related to their uses, a conclusion borne out by the recent study done for the ETUC by the University of Sheffield on the number of work-related diseases that REACH could help to avoid[4].

The ETUC has consistently called for an ambitious REACH regulation, arguing that a lack of reliable data would prevent the project from delivering its health at work aims. The ETUC and its members will therefore continue to press second reading proposals to achieve the best possible ratio between the costs of the reform and the expected benefits for human health, the environment and innovation in European industry (see box).

The ETUC strongly supports the mandatory substitution principle in the authorisation phase as proposed by the European Parliament, partly because it is already found in the EU legislation on the protection of workers exposed to carcinogens[5], and it is synergies rather than inconsistencies that are needed between interlocking legislation, but also because unless they are placed under the cosh, few producers are likely to commit to finding new ways of replacing the production of the most dangerous substances with safer alternatives.

The Commission believes that the co-decision procedure between the European Parliament and Council could be concluded by the end of 2006, so that the REACH system would come into effect in 2007. The regulation would be fully implemented 11 years after that, when the 30 000 substances covered by the reform have been registered with the European Chemicals Agency. ■

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4 Simon Pickvance *et al.*, *The impact of REACH on occupational health with a focus on skin and respiratory diseases*, ETUI-REHS, 2005. The report can be ordered from http://hesa.etui-rehs.org > Publications.

5 Directive 2004/37/EC.

HESA Department publications on REACH

The impact of REACH on occupational health with a focus on skin and respiratory diseases

Simon Pickvance et al., *University of Sheffield*

ETUC/ETUI-REHS co-publication, 2005
76 p., 21 x 29.5 cm, ISBN : 2-87452-008-x

"90 000 occupational disease cases will be avoided in Europe, saving 3.5 billion euros over 10 years for the EU-25." These are the mind-boggling figures to come out of this ETUC/ETUI-REHS report. The study on how REACH will benefit workers' health was done by researchers from the University of Sheffield, looking chiefly at respiratory and skin diseases. Adopting an ambitious REACH should help bring down the numbers of these diseases that have been steadily rising for half a century. Everyone will win out – social security systems, through reduced costs; workers, through a better quality of life; and not least employers, who will avoid productivity losses from sickness-related absences.

REACHing the workplace

How workers stand to benefit from the new European policy on chemical agents

Tony Musu

ETUI-REHS, 2004, 36 p., 17 x 24 cm, ISBN: 2-930003-44-8
This brochure is also available in French and many other languages.
A new Spanish version is now out of press.

The HESA Department has decided to focus in this brochure on the health and safety benefits inherent in the REACH legislative reform for the millions of European workers who are exposed to chemicals in the workplace on a daily basis. In order to better understand in what way the REACH reform represents a real opportunity to reduce the number of occupational diseases related to exposure to dangerous substances, this publication begins by examining the reasons why a reform is needed; it then describes the content of the REACH reform and the changes it will make to the existing legislation. It concludes by explaining the state of play in the legislative process underway at the European Parliament and the Council, which should result in the adoption of the REACH Regulation.

REACHing the workplace. Trade unions call for a more ambitious European policy on chemicals

HESA Newsletter, Special issue, No. 28, October 2005

Report on the ETUC conference on REACH held in March 2005.

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European chemicals and worker protection seminar

Trade union representatives from 23 European countries were in the Latvian capital, Riga, from 26 to 28 January for a seminar hosted by the European Trade Union Confederation's research institute (ETUI-REHS) to discuss union actions and ways of improving health and safety for the millions of European workers who are exposed each day to chemicals in their workplaces.

Chemicals are widely used across many sectors of the economy: in the chemical industry that manufactures them, but also in many downstream user sectors, like the building, textile and car-making industries, health care, etc. Using Eurostat findings, the ETUI-REHS calculates that a third of recognised occupational diseases each year in Europe are related to exposure to dangerous chemicals[1]. Chemical risks are also a major cause of deaths among European workers[2].

The seminar put a special focus on three topics:
- how the European legislation to protect workers against chemical risks is being applied in the different Member States;
- the new European legislation on the use of and trade in chemicals (REACH); and
- occupational exposure limits for carcinogens.

The same problems in all EU countries

European legislation to protect workers exposed to dangerous chemicals is mainly found in two directives: the 1990 Carcinogens Directive[3] and the 1998 Chemicals Directive[4]. These directives have been implemented into national law in the 25 EU countries, and require employers to do a workplace risk assessment, and to take the necessary preventive and protective measures.

Whatever country they came from, the seminar participants all reported the same thing – these laws get very patchy application in the workplace. Very large firms are judged to have done a satisfactory job, though they could do better, but huge problems with application remain in small and medium-sized firms (SMEs) in all sectors. There are many reasons why. Some employers may not (or claim not to) know about the legislation, the lack of preventive and protective measures often coincides with their being no workers' representatives in the company, workers are untrained in chemical risks, the dangers and hazards of chemicals are very often unknown (missing or faulty labels, incomprehensible or no safety data sheets).

The participants agreed that the trade union priorities for ways to improve the implementation of these laws in workplaces were: strengthening the trade union presence in SMEs; more training and information for workers on chemical risks; demanding that national authorities implement a comprehensive health at work strategy (better coverage of workers by preventive services, tighter labour inspectorate controls, measures against contingent working).

REACH: dispelling the misconceptions

The Riga seminar was also an opportunity to review REACH, the reform of European chemicals use and trade legislation currently under discussion by the European Parliament and Member State governments.

REACH was put forward because current European laws were seen as no longer giving the necessary protection to human health and the environment against chemical risks, but also to boost the competitiveness of the European chemical industry.

The new REACH system requires chemical manufacturers and importers to prove, through a registration dossier, that the risks from using their substances can be controlled before they can be put on the market. They will also have to get authorisation for the use of substances of very high concern like carcinogens, for example.

The reform has been hotly debated for some years right across Europe. Industry has spelled out in capital letters that the reform is too far-reaching, too bureaucratic, will be much too costly, and especially that it will cost many jobs in SMEs.

These arguments, taken up by the European press but also in firms, are part of a lobbying strategy by the employers to water down if not defeat this draft regulation. The Riga seminar unpicked each of these arguments, and showed how REACH can benefit workers.

[1] See: Tony Musu, *REACHing the workplace. How workers stand to benefit from the new European policy on chemical agents*, TUTB, 2004.
[2] Kogevinas *et al., Estimation of the burden of occupational cancer in Europe*, study financed by Europe Against Cancer (contract SOC 96-200742 05F02), 1998.
[3] Directive 2004/37/EC.
[4] Directive 98/24/EC.

REACH – too far-reaching and costly?

The REACH reform concerns only substances produced by any one manufacturer in quantities of more than one tonne per annum, i.e., 30% of the 100 000 chemicals listed on the European market. But not all the European firms that handle chemicals will have to put in a registration dossier, only those that manufacture or import them. So the only big obligation on downstream users (construction, textiles, garages, etc.) will be to apply the risk management measures communicated by their suppliers.

Firms will also have time to prepare, as their obligations (and so the associated costs) will be spread out over an 11 year timetable. The direct costs that the chemical industry will have to bear have been assessed by the European Commission at 2.3 billion euros over 11 years, equal to less than 0.04% of the European chemical industry's annual turnover (586 billion euros in 2004).

Will REACH cause job losses in Europe?

The scaremongering about industry relocation and job losses due to REACH, backed by many subjective impact assessment studies, does not stand up to an objective analysis of the facts. So, the findings of the further impact assessment study done under the supervision of a multi-party working group of Commission, industry, trade union and NGO experts, show that the risk of industry flight from REACH alone is not on the cards[5].

The main reason for switching production elsewhere is more often lower labour costs in the new country than any marginal costs associated with the rules designed to protect human or environmental health in the country of origin.

European trade unions strongly endorse REACH

The European Trade Union Confederation (ETUC) is all for the reform because, by encouraging industry to develop cleaner substances, REACH combines enhanced competitiveness for European industry with better protection for workers, consumers and the environment. The ETUC study to assess the benefits of REACH[6] finds that the new legislation will help avoid 90 000 cases of occupational diseases from workers being exposed to dangerous chemicals each year in Europe. That would add up to total average savings of 3.5 billion euros over 10 years and more than 90 billion over 30 years for the EU-25. The savings will boost social security coffers through reduced sickness benefit payments, while workers will enjoy health-related quality of life gains, and employers in all sectors will avoid productivity losses from sickness absenteeism.

Role of trade unions at national level?

The seminar participants agreed on the need to start or carry on explaining REACH at national level to firms in the different branches of industry. It was also thought important to put the ETUC's positions across better to policymakers in each EU Member State. A trade union information brochure on the benefits of REACH – available in 12 European languages[7] – has been produced by the ETUI-REHS to help do this.

Occupational exposure limits (OELVs)

There are two kinds of OELV in European legislation: indicative (directive 98/24/EC) and binding (directive 98/24/EC and directive 2004/37/EC).

Indicative occupational exposure limits (IOELVs)
IOELVs can be established when an assessment of the available scientific data leads to the conclusion that a threshold can be clearly identified below which exposure to the substance should not have an adverse impact on human health.

Under article 3 of Chemicals Directive 98/24/EC, feasibility factors (socio-economic and technical in particular) are not to be taken into account when establishing IOELVs. Directives containing IOELVs are adopted by the European Commission in accordance with the adaptation to technical progress procedure laid down in article 17 of Framework Directive 89/391/EEC.

For any chemical for which an indicative OELV has been established at Community level, Member States must establish a national exposure limit which takes account of the Community indicative exposure limit and is in accordance with national legislation and practises. A hundred chemicals have IOELVs under directive 98/24/EC since the European Commission adopted directive 2006/15/EC drawing up the second Community level list of IOELVs.

Binding occupational exposure limits (BOELVs)
BOELVs reflect socio-economic and technical feasibility factors, plus criteria taken into account when establishing IOELVs. For any chemical for which a BOELV has been established at Community level, Member States must establish a corresponding national BOELV which may go further but may not exceed the Community exposure limit.

BOELVs under directive 2004/37/EC have been established for only three chemicals (benzene, vinyl chloride monomer and hardwood dust). Lead (and its derivatives) is the only one to have a BOELV under directive 98/24/EC.

5 "Trade union view on supplementary economic impact studies", *Hesa Newsletter,* No. 28, October 2005, p. 8-11.
6 Simon Pickvance *et al., The impact of REACH on occupational health with a focus on skin and respiratory diseases,* University of Sheffield, ETUI-REHS, 2005. Available to order from http://hesa.etui-rehs.org > Publications.
7 Musu, *op. cit.*

Trade union approach to carcinogen exposure limits

In March 2004, the European Commission set going a revision of directive 2004/37/EC on the protection of workers against the risks related to exposure to carcinogens and mutagens. As part of this, it canvassed the social partners' opinions on how to remedy the legislation's shortcomings.

The main failing of directive 2004/37/EC is that substances toxic for reproduction are outside its scope[8]. But delays in bringing in occupational exposure limit values (OELVs)[9] for substances covered by the directive at European level are also a factor. Whereas OELVs for many carcinogens are found in different national laws, exposure limits have been set under the directive for only three substances (see box).

In its response to the first phase of consultations, therefore, the ETUC also stressed the need to improve this procedure and increase the number of substances assigned OELVs[10].

The Riga seminar's third discussion topic set out to map the broad lines of a European trade union consensus on a possible new Community procedure for setting OELVs for carcinogens. The ETUC has been asked to put its position on this to a tripartite seminar to be hosted by the Luxembourg Advisory Committee on Safety and Health in 2006.

The participants achieved a consensus on the following points:

1. Any new OELVs for carcinogens set at European level must be binding[11], but the procedure for setting them must not be influenced by technical or economic feasibility considerations, as is the case under the present legislation (see box).
2. The legislative function of these exposure limits must be as one of the ways to meet the secondary objective of the directive, which is to minimize workers' exposure where the primary objective cannot be met. The overarching objective is still to completely eliminate exposure to the carcinogen, or replace it by a safer alternative substance.
3. These "reference values" should always be communicated with the associated risk level[12] and be shown on separate lists from OELVs for non-carcinogenic substances.

Other concepts, like "acceptable risk", will be addressed at a forthcoming seminar set up by the ETUI-REHS to finalise the European trade union consensus on the matter.

Conclusions

The Riga seminar was an opportunity for trade union representatives to take stock of workplace chemical risk management in the different countries of the EU through a review of how the Community legislation on it is being applied nationally. Specifically, it allowed participants to discuss what role trade unions could play at different levels in the prevention of work-related diseases and accidents due to dangerous substances. Above all, it helped rekindle a European network of trade union experts which the ETUC can draw on to develop a united trade union line in such a highly technical field as occupational exposure limits. A network that will also help cascade at national level the consensus positions of the ETUC and its members on legislation in the works, like the REACH reform. ■

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[8] It covers only category 1 and 2 carcinogens and mutagens.

[9] Airborne concentration below which exposure to the substance should not have an adverse impact on human health.

[10] http://hesa.etui-rehs.org/uk/dossiers/files/20-Res-ConsultCancerRep-gb.pdf.

[11] European OELVs are of two kinds: binding (directive 98/24/EC and directive 2004/37/EC) and indicative (directive 98/24/EC). For the former, employers must ensure that the breathable concentration of the substance on the workplace is equal to or lower than the OELV set in the directive. For the latter, the airborne concentration of the substance may be above or below the directive value.

[12] Probability of a worker developing cancer from an exposure of 8 hours a day throughout his working life.

"Ergonomic" standards in biomechanics

An examination of the draft standard on repetitive movements (prEN 1005-5)

Introduction

European standards (EN) that cover ergonomics issues under directive 98/37/EC – the Machinery Directive – are developed by the European Committee for Standardisation's (CEN) Technical Committee TC 122.

The ETUI-REHS' Health and Safety Department is an associate member of CEN. This European trade union participation comes out of the European trade union movement's aim to see free market principles balanced out by social and environmental imperatives.

European trade unions demanded that freedom of movement – of work equipment in this case – be compensated by a high level of protection for workers, which they are now working to monitor through organising and leveraging the feedback of information on user experience.

The Machinery Directive is the cornerstone of the New Approach standardisation process[1]. That process is kept under review through the ETUI-REHS's active participation in meetings of the working group of the Standing Committee for Machinery Directive 98/37, in the work done by CEN Technical Committees TC 114 "Safety of machinery" and TC 122 "Ergonomics", and through the ETUI-REHS's comments and policy positions on standards that affect workers' health and safety. For TC 122 specifically, the ETUI-REHS is actively involved in Working Groups WG 2 "Ergonomic Design Principles" and WG 4 "Biomechanics".

This article reviews draft standard prEN 1005-5 on repetitive movements, from the two angles of our collaboration in CEN's work, and the European debate on preventing work-related musculoskeletal disorders.

WG 4 has for several years been developing "ergonomic" standards on biomechanics. These include all five EN 1005 standards that apply to **human physical performance** in connection with the **safety of machinery**, namely:

- EN 1005-1:2001 – Terms and definitions
- EN 1005-2:2003 – Manual handling of machinery and component parts of machinery
- EN 1005-3:2002 – Recommended force limits for machinery operation
- EN 1005-4:2005 – Evaluation of working postures and movements in relation to machinery
- prEN 1005-5 – Risk assessment for repetitive handling at high frequency

The European environment

Poor working conditions compound the physical strain of work, and this takes an additional physiological toll – musculoskeletal, metabolic and psychosocial, amongst others – on workers. Our response to the European Union's (EU) recent social partner consultation and our article on this matter in the June 2005 *HESA Newsletter*[2] give an account of these work-related problems and possible ways of addressing them.

Musculoskeletal disorders (MSD)[3] and the consequences of work-related stress are the top two complaints voiced by workers in the Dublin Foundation's successive surveys.

European workers complaining of:

■ Back pain	33%
■ Generalised fatigue	23%
■ Muscle pains in:	
- neck and shoulders	23%
- upper limbs	13%
- lower limbs	12%

Source: Dublin Foundation[4]

In the United States, where the business costs of work-related diseases are calculated in forensic detail, concurring analyses[5] point to MSD being a major cause of absenteeism and a major aggregate cost burden on company budgets. It can be inferred from the available epidemiological data that the situation in the EU is similar, but the cost is split between governments, through social security schemes, and business[6]. There is little incentive for the least responsible European employers to improve employees' conditions, as mutualized intervention by social security schemes tempers the harmful effects (especially MSD and stress) of their mismanagement of working conditions: this "law of unintended consequences" might be avoided if their civil liability were to be more often challenged in the courts…

MSD is a problem of epidemic proportions, and steps have been taken to try and halt the spread. Biomechanical standards are one potentially important way. These Machinery Directive standards are meant to enable machinery designers not to develop machines that cause MSD. Sadly for workers, the scope of standardisation under the Machinery Directive stops short at the machine as a piece of kit.

[1] See: http://europa.eu.int/comm/enterprise/newapproach/index_en.htm.

[2] See: "Musculoskeletal disorders: where we are and where we could be", *HESA Newsletter*, No. 27, June 2005, p. 22-27.

[3] All joints: trunks and limbs.

[4] *Third European survey on working conditions 2000*, Dublin, European Foundation for the Improvement of Living and Working Conditions, 2001. Downloadable from www.eurofound.eu.int/ewco/surveys/index.htm.

[5] "Almost six million injuries happen in the workplace each year, costing over 60 billion dollars in lost wages, healthcare expenses, legal costs and worker's compensation claims, according to the AAOS. The majority of injuries resulted from over-exertion, repetitive stress injuries and falls in the workplace". American Academy of Orthopaedic Surgeons (AAOS): 31 August 2002.

[6] European businesses bear only part of the costs of the MSD that they create (essentially indirect costs), leaving State social security systems to foot most of the bill for MSDs that stem from physiologically unfavourable working conditions.

Trade union issues in ergonomics standards development

The plain fact is that the scope of ergonomics standards development is restricted by Machinery Directive 98/37 and, within that specific framework, by the mandates that the European Commission hands to CEN: the physical limits of machinery strictly circumscribe the development of ergonomic standards by TC 122. For ergonomists, this strict limitation of the coverage and applicability of ergonomic standards distorts the approach from what it should be – participatory, holistic and multidisciplinary. In the ergonomist's view, ergonomics standards development will be always too narrow.

This restriction of the ergonomic approach creates a clear, widening gap between the limits of machinery and its use in the overall setting of where it is sited. In fact, ergonomic standards under the Machinery Directive do not sufficiently protect workers[7] against the potentially harmful effects of use, which runs from the putting in place of the machinery, through all stages of its life and interaction with workers, to its dismantling. The operator is factored in, if at all, only for that part of his activities directly connected with use of or an intervention on machinery. In other words, the machinery designer can leave out all the shortcomings that stem from the machinery being included as part of a more complex production system, because that is not a Machinery Directive issue, but one under the Framework Safety and Health Directive (89/391) and the individual directives adopted under it[8].

This major, and particularly vexed, issue in the debate, therefore comes into play when the standard is being framed, the aim being to try and maximize the "operator" aspects in it, without compromising the future standard's potential for becoming a harmonised standard which will confer on machinery designed to its guidelines a "presumption of conformity to the Machinery Directive". The boundaries of this balancing act are dictated by the limits of the machinery.

The ergonomic approach in standards development

The ergonomic approach in framing machinery design standards consists of the following stages[9]:

- determination of the limits of machinery;
- hazard identification;
- risk estimation;
- risk assessment.

In this approach, determination of the limits of machinery relate to:

- the phases of machinery life: intended use but also assembly, dismantling, cleaning, maintenance, repair, etc;
- the limits of machinery, including the intended use, and the consequences of reasonably foreseeable misuse or malfunction;
- the foreseeable uses of the machinery by different classes of people (sex, age, dominant hand usage, etc);
- the anticipated level of operator training;
- the exposure of other persons to the reasonably foreseeable hazards of the machinery.

Factoring biomechanical risk factors into standard development (prEN 1005-5)

Draft standard[10] prEN 1005-5 offers machinery designers a two-stage method for "risk assessment for repetitive handling at high frequency", in line with the 1005 series of standards on "human physical performance".

Purpose and characteristics of the draft

Draft standard prEN 1005-5 concerns handling operations repeated at high frequency within the entire life cycle of a machine from its construction to its dismantling. The factors of duration and lack or absence of recovery time are not included in the standard. It concerns only the upper limbs, and not the neck, back (in fact, the trunk) or lower limbs, all of which are expressly excluded from the draft.

The future standard sets out to guide machinery designers first towards avoiding risks related to repetitiveness of movements. If this risk cannot be avoided, the designer is referred to the four-step approach described in Guide ISO 51 and standard EN 1050: (1) hazard identification; (2) risk estimation; (3) risk assessment; (4) risk reduction.

The key concepts specific to this standard are:

- **Repetitive task:** task characterised by repeated work cycles.
- **Work cycles:** sequence of technical actions that are repeated always the same way.
- **Technical action:** elementary manual actions required to complete the operations within the work cycle, such as holding, turning, pushing, cutting (note that the standard does not deal as such with the elementary movements that make up these actions).

Contents of the standard

The standard offers two methods, organized into two successive stages, one simple, the other detailed:

1. The simple method enables the designer to check the absence or presence of risk factors for each upper limb, and to move on to method 2 (detailed) if any are found.
2. The detailed or OCRA (OCcupational Repetitive Actions) method requires the designer to assess a series of risk factors by weighting them by multipliers which will enable him to calculate an OCRA index. The index value will indicate the acceptability or otherwise of a risk related to machinery whose design involves repetitiveness.

[7] User / operator / worker means a user of the machinery who is not the purchaser (firm X who buys and uses machine Y). It is the end user who is the main focus of concern, relating not only to the intended use of machinery but also foreseeable misuse (intended misuse), which the risk assessment must also take into account.

[8] The Machinery Directive is meant to achieve complete harmonization based on Commission proposals to ensure a high level of consumer and environmental protection (article 95 of the Treaty). This means that Member States must implement the Directive through measures to achieve exactly the objectives set, and cannot introduce rules that would provide a higher level of health or environmental protection other than as permitted by article 95. Framework Directive 89/391, by contrast, lays down minimum requirements, which means that States can introduce measures that give workers a higher standard of protection.

[9] See standard EN 1050:1996.

[10] The words "draft standard" and "standard" are used interchangeably.

The risk factors analysed are:

- Repetitiveness, which is central to the evaluation. The approach is based on B. Silverstein's definition[11]: *cycle time < 30 S or > 50% of the work cycle.*
- Frequency of technical actions: *< 40 technical actions per minute.*
- Forces whose recommended force limits are based on EN 1005-3.
- Awkward or uncomfortable postures and movements.
- Additional specific factors such as:
  - characteristics of the object handled;
  - vibration and impact forces;
  - environmental conditions;
  - individual and organisational factors;
  - durations and recovery times.

Restrictions and limits of the method:

- it applies only to simple working tasks (mono task);
- it applies only to upper limbs other than the neck/shoulders system, whose dynamics and physiology cannot be entirely dissociated from those of the arms, forearm and hands;
- it treats different joints that perform elementary actions (taking, holding, turning, etc) identically by applying the above criteria to them.

State of play on prEN 1005-5

The text is at the top of WG 4's agenda; it is in the final stage of development, but has suffered a series of setbacks over the years, most recently the CEN consultant's questioning[12] of whether it can be considered as a future harmonised standard, and his recommendation that it be given the status of a "technical document" i.e., not standard-setting. By contrast, the survey of CEN Member States finds more than 75% in favour of accepting the document as a future standard.

Where do the problems lie?

Both the CEN consultant and the Member States acknowledge the need to assess the risks related to high frequency repetitive actions when machinery or its components are being designed.

The purpose of the standard is not what is in question, therefore, but its contents because:

- not all the reference criteria are included in the standard, which means having to go back to the literature (which goes against the *standalone* principle of technical standardisation);
- the method proposed is too complex, it is not a "simplified" method that makes it possible to check whether the risk exists;
- there are gaps in the scientific evidence (acceptable frequency limits for the different joints concerned), and – proven (accepted) – evaluation criteria are not currently available;
- there is an over-emphasis on user-related requirements;
- the method is incomplete because it excludes the neck/shoulders system among other things, and takes no account of either mental aspects or working conditions (organisation);
- there is a limited consensus on the use of the OCRA method.

Where do we stand?

We want to stop MSD developing in the first place. In terms of a preventive strategy, that means eliminating MSD risk factors from the design of machinery or any other work system in order to prevent that machinery or system from producing harmful effects for the worker, the work environment or, more generally, anyone at all.

Even more to the point, we are deeply concerned about the harmful effects of repetitive work. These effects may be musculoskeletal, but also mental and social, and are copiously documented in a scientifically coherent and statistically significant way in the available literature. The risk factors that characterise repetitive work therefore need to be dealt with at a very early stage in order to eliminate them as far as possible[13] from the design of work systems. We therefore see any instrument that enables the designer of machinery (or of one of its components) to identify, estimate and eliminate a risk of repetitive work at the design stage as being a real asset.

Prima facie, we welcome the benefit that a standard on this matter would bring[14]: if the problem of repetitiveness is eliminated, the likelihood of having to deal with it later on is gone, which will also make the prevention time freed up available to get a better grip on other risk factors.

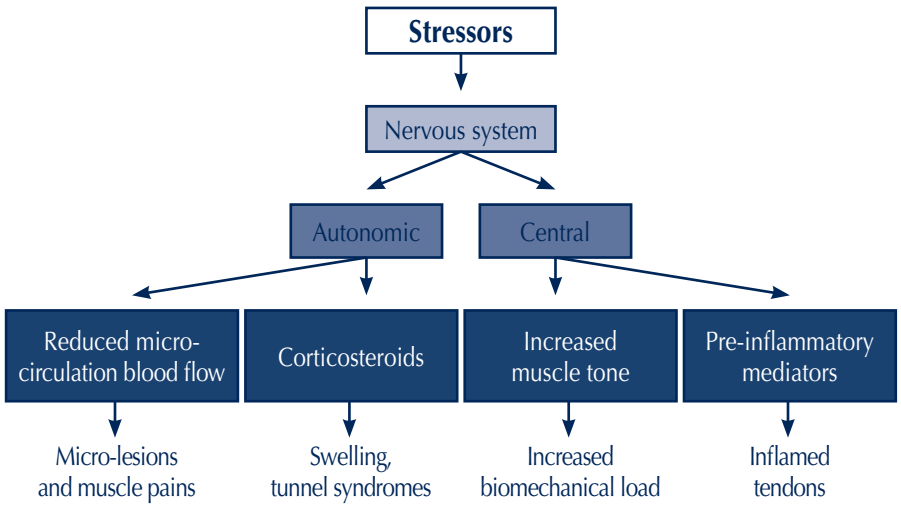
Finally, no "golden standard" for the prevention of musculoskeletal risks has been developed yet as far as we know, and conclusive quantitative criteria are not always available, which calls forth the following observations.

1. There may not be a "golden standard" available, but we could settle for the best currently available approach, and leverage its use to develop and gradually improve it. The argument does not therefore stand up alone.

2. The user-friendliness of analysis methods and the standards that propose them is a key criterion. The OCRA method, used here, is complex and quite unwieldy. It requires special training and is time-consuming to implement. Its designers are currently trying to produce documentation and automate the calculations by turning the method into a more workable computer program that may address some of the complaints levelled against it.

3. Some of the frequency criteria proposed to distinguish "highly repetitive" from all other movements are debatable because they are applied without distinction to different joints; however, some fine-tuning could probably be done here through future versions of the method. This is not

[11] Operational definition for epidemiological studies (Silverstein *et al.*, 1986).
[12] The CEN consultant's judgement is based on the merits of the draft as a future standard, the linkages with the Machinery Directive's essential requirements, and the quality of the technical information.
[13] By reference to the state of the art in technology, the overriding need have repetitive tasks done by a man/woman because there is no other alternative, and they cannot be automated. In other words, because the human factor is an irreplaceable added value in and of itself.
[14] Bearing in mind, however, that it is a relatively weak because non-binding instrument.



an undue concern, but does enable the two following points to be developed: one concerning the need for measurement, the other on the holistic approach to MSD.

4. Does credibility, or factoring the MSD risk out of work system design, depend on being a numbers game? A blinkered measurement focus can bring its own risks[15]. On the other hand, criteria with which to distinguish the "highly repetitive" from the rest are certainly needed. Let us be clear about this: we believe that simple observation of movements or those of the production capacities of machinery with a human interface can enable an opinion to be given on the presence (as opposed to the absence) of highly repetitive movements without the use of sophisticated measurement techniques provided the discriminators are specifically known for the different joints[16] concerned and the conditions of observation are good.

5. The holistic approach to musculoskeletal risks cannot be limited to the observation of frequencies, because the risk factors are more complex by far. An exhaustive list is outside the scope of this article, but the main categories are listed below.

Mechanical and biomechanical risk factors in the strictest sense

1. Interface characteristics:
   - quality and comfort of coupling points;
   - temperature;
   - force transfer to and from the object.

2. Characteristics of demands, movements and postures:
   - weights of the objects and/or tools handled;
   - static or dynamic character of demands:
     - movements performed
     - postures adopted
     - joints used
     - movement ranges
     - repetitions (cycle time)
     - time-bound variability of repetitions
   - length of exposure;

3. Presence of hand-arm or whole-body vibration.

Movement/handling-related sensory and cognitive requirements

1. Specific sensory requirements (sight, hearing, touch, etc.) and/or precision work (increased static load).
2. Specific cognitive requirements: complex movements with multiple choice options, non-compliance with movement stereotypes (acceleration, incrementing, movement direction, etc).

Work environment-related requirements

Biomechanical factors may be the principal causal agents of work-related MSD, but restricting prevention to them alone is misguided: there is a wide consensus of evidence in the scientific literature that all points towards organisational, environmental and psychosocial factors being major contributors to the occurrence of MSD or, conversely, to preventing them if properly managed.

The classification of risk factors into physical and other factors (organisational, psychosocial, environmental) is an artificial distinction that over-simplifies the understanding of causal mechanisms by distorting the overall or holistic approach advocated by ergonomists.

For example, precision work will require one kind of muscle work to ensure limb stability (placing), and at the same time, another kind of muscle work to enable the same limbs to perform precision micromovements. This demand increases muscular tension and conflicting demands on the musculoskeletal system, and constitutes a stressor (stress factor), i.e., it turns into a mental stressor.

By contrast, neurophysiology offers a ready explanation for how stressors[17] can cause MSD where there are no typified biomechanical stressors present (see diagram) or where biomechanical stressors are particularly low (the "Cinderella fibres" scenario) as with computer work.

[15] If there is an accident risk that can be immediately overcome – such as a hole in the ground where someone could injure themselves – does it necessarily have to be measured before deciding to act, or can immediate preventive measures be taken on the evidence of gross observation alone?

[16] These critical frequencies are not identical for fingers, wrists, elbows, etc.

[17] Stressors here meaning risk factors for work-related stress.

■ **Organisational and psychosocial risk factors:**
- role conflict;
- conflict between prescribed work and tasks actually done;
- too little skill discretion and reduced scope for manoeuvre (organisational, temporal and/or spatial);
- unpredictability of operations (rush or unexpected jobs);
- time pressures (just in time, lean production);
- new stressors following an attempt at remediation through job rotation (job enlargement, job enrichment), e.g., qualitative stressors and customer-/patient-facing work, etc.;
- productivity pay (piece-rates, production bonus).

■ **Environmental and workspace-related risk factors:**
- accessibility: of work locations, control devices; reaching distances; lifting and lowering distances; angles of vision;
- movement-related risks: slipping, stumbling, falling;
- noise;
- air quality, cleanliness and hygiene of facilities: chemical, biological, infection and other risks;
- accident risks: fire, explosion, burns, cuts, etc.

Conclusion

Standards are one instrument that can help prevent MSD, but we must be under no illusion about their scope – they are voluntary, and go no further than the strict physical limits of machinery, at least not those under the Machinery Directive. Voluntary or not, however, harmonized standards find considerable favour with the public authorities: e.g. presumption of conformity to the Directive and market access.

Draft standard prEN 1005-5 on highly repetitive movements applies only to a very small part of the musculoskeletal system, in this case, the upper limbs excluding the shoulders and neck. As a result, the standard's impact and contribution to MSD prevention can clearly only be judged in terms of this restricted area of the anatomy.

The future standard could play into the prevention of MSD, but only if that prevention is organised as a coherent whole of which technical standardisation is one part.

The European trade union movement, responding to the social partner consultation carried out by the European Commission, called for prevention of MSD to be made the focus of a resolute policy to tackle MSD at source based on tried and tested prevention principles like those offered by contemporary ergonomics, and instruments dedicated to preventive action, including in small and medium-sized, and very small firms.

Any addition to this preventive structure that works towards promoting health and safety for workers, and more specifically helps, if not to defeat then at least stem the epidemic spread of MSD, is welcome. ■

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Ionizing radiation: what does it mean for workers' health?

The European Union's ionizing radiation watchdogs linked together in the Esorex network[1] estimate that in 2000, a million workers were being monitored for exposure to ionizing radiation. Thirty-five percent were receiving measurable doses. They work in various sectors of activity, mainly the medical and veterinary sector, but also the nuclear industry and general industry where sources of ionizing radiation are used. In EU countries with a reliance on nuclear-generated electricity[2], workers may be employed by nuclear power plant or nuclear fuel cycle facility operators, or so-called "outside" workers working for firms that provide services to nuclear power plants, especially during unit outages. Significantly, these workers may also come from countries that have no nuclear industry.

Community-level standards of protection against ionizing radiation were brought in under the Euratom Treaty to cover all exposed workers, because repeated exposure to doses of ionizing radiation can cause cancers and leukaemias. Directive 96/29, which consolidates several previous directives, sets the standards of protection for the general public and workers. Directive 90/641, which relates only to the "operational protection of outside workers", enjoins Member States to ensure that this category of workers receive the same protection as that provided to the permanent workers employed by operators. The basic standards lay down a set of provisions to ensure that "all exposures shall be kept as low as reasonably achievable, economic and social factors being taken into account".

Dose limitation values are set for the general public and workers. For the latter, the dose is set at 100 mSv (see box) over five years[3]. The requirement for pregnant women is that the conditions to which they are subject in the context of their employment must be such that the equivalent dose received by the child to be born does not exceed 1mSv between the time the pregnancy is notified and childbirth. The allowed dose for the general public is 1 mSv a year.

The Euratom Treaty (article 31), which is incorporated in the Treaty on Union, places specific consultation requirements on the European Commission. So, when putting forward proposals on health and safety matters, the treaty requires the Commission to consult only the European Economic and Social Committee and a group of experts appointed by the Member States. Regrettably, the Commission's proposal to give the Luxembourg Advisory Committee responsibilities in radiation protection was not adopted by Council[4]. As things stand, therefore, there is no obligation at Community level to consult the trade unions on either proposals or the implementation of Community basic standards.

The International Agency for Research on Cancer's (IARC) recently published study on a population of more than 400 000 nuclear power industry workers in 15 countries[5] followed-up over an average period of 12.7 years is important in this connection. This retrospective cohort study set out to estimate the risk of cancer mortality, including leukaemia, from exposure to low levels of high energy photon radiation (gamma rays). Real time measurements of individual doses of radiation from external sources were available for all the workers. The study was limited to workers who were wearing personal

Current measuring units for ionizing radiation

Bq: In order to measure the quantity of radioactivity, the unit becquerel (Bq) has been defined in the international system of units. One becquerel is the number of radionuclides per second on search of more stability. The Becquerel replaces a former unit, the curie (Ci), which was the amount of radioactivity of 1 gram of Radium. 1 curie = 3.7 x 10^{10} Bq.

Gy: The Gray (Gy is the unit of absorbed dose, indicating the quantity of energy absorbed per unit mass of material such as tissue. 1 Gy = 1 joule of radiation energy absorbed per kilogram of tissue. 1 mGy = 1/1000. A whole-body dose of more than 4.5 Gy to a group of people would be fatal for 50% of them if not treated adequatlely.

Sv: The radiation effect varies according to the type of radiation (alpha, Beta, X or gamma rays) and with the different radiosensitivity of each organ. The Sievert is the unit of equivalent dose where the absorbed dose (gray) is multiplied by correcting factors accounting for those differences. This indicates the risk of ionising radiation exposure to an organ or tissue and can be summed for the whole body as an indicator of health effect. It is then called the effective dose.

The millisievert (mSv) is commonly used to measure the effective dose at the work place and in diagnostic medical procedures (e.g. X-rays, nuclear medicine).

[1] See: www.esorex.cz.
[2] Finland, Sweden, Lithuania, Germany, Belgium, Netherlands, Great Britain, Spain, France, Czech Republic, Slovakia, Slovenia, Hungary.
[3] The directive permits Member States to set a maximum annual dose, an option seemingly taken up by the old Member States.
[4] Council Decision of 22 July 2003.
[5] Analysing exposure data from workers wearing dosimeters in Australia, Belgium, Canada, South Korea, Spain, the United States, Finland, France, Hungary, Japan, Lithuania, the United Kingdom, Slovakia, Sweden and Switzerland.

dosimeters and had worked for at least a year in a nuclear power plant, research, nuclear waste treatment, or nuclear fuel, isotope or weapons production facility. The situation of workers covered by the Outside Workers Directive was therefore not considered in the IARC study. Who these workers are, what dose they receive, and whether they benefit from the same protection as workers employed by nuclear power plant operators are all unanswered questions (see article, p. 26).

We asked the Belgian partners in the study to present their results and the surrounding debate to us, with special emphasis on aspects related to the protection of workers, pregnant woman, and unborn children.

Carrying out an epidemiological study on this scale, covering a huge number of workers, shows the importance of collecting data on long-term individual exposures. As the authors of the following article emphasize, the study findings raise urgent questions about estimating the scale of exposure levels and the effects of combined exposure to multiple carcinogens.

We believe these findings are essential to inform the forthcoming European debate around the adoption of exposure limits for carcinogens[6]. Making sure that employers fulfill their safety obligation, which is that "the level of exposure is reduced to as low a level as is technically possible", is the second strand of that debate. In pointing out the limitations of its study coverage, the IARC also raises the issue of the practical implementation of the Carcinogens Directive for all exposed workers, regardless of their employer or type of employment contract. ■

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6 See directive 2004/37/EC.

The health effects of low-dose ionizing radiation

New epidemiological results and perspectives

Gilbert Eggermont, Louis de Saint-Georges et Hans Vanmarcke *

The evaluation of the health effects of low-dose ionizing radiation has always been a focus of controversy. At first sight, this seems paradoxical since the epidemiological data of Hiroshima-Nagasaki and decades of radiobiological research have yielded considerable knowledge of the potential health impacts. This article explores how current risk management in the nuclear industry are trying to factor uncertainties into a precautionary approach.

The cancer hazard of ionizing radiation has been characterized by the International Agency for Research on Cancer (IARC) and the World Health Organisation (WHO), since epidemiological evidence first came available. As a result, many social security systems have taken ionizing radiation into consideration for compensation as an occupational disease, at least if evidence of attribution or poor protective practice can be shown, but also for preventive measures for pregnant workers.

This article looks at the relative risk of low level exposure to ionizing radiation, as it occurs in the environment, at the workplace and in patient exposure excluding cancer therapy (where radiation is used to kill off malignant cells).

We first consider the nature of the effects distinguishing between stochastic and non stochastic effects (defined below). The biological mechanisms of interaction with radiation are highlighted. We endeavour to explain the reasons for the controversy, perceptual differences, group dynamics and interests. We then discuss the findings of recent epidemiological studies and some prospects offered by new scientific insights in molecular biology, focusing on ethics and occupational diseases. Particular attention is paid to increased foetal exposure risks. We conclude with a look at the multifactorial exposure challenge.

Biological Effects of Ionizing Radiation

There is no question about the health effects of high-dose radiation, for which a clear dose-response relationship exists. In these so called deterministic effects, the severity of the effect is directly related to the number of damaged cells. High dose events are exceptional, essentially related to accidents, military action, or medical treatment in which the expected detrimental effect is targeted to eliminate a tumour. Radiation protection policy should prevent any high-dose occupational exposure.

The big concern with low dose exposure is the increased risk of cancer from the increased radiation dose. At low doses, the probability of an effect, but not the severity of the effect, is dose-related. Whatever the low dose received, if a cancer develops, the severity of the effect (resulting in a fatal outcome in half of the cases) is not in question. What must be evaluated, therefore, is the cancer incidence probability. Such delayed effects are called probabilistic or stochastic.

There is no proof of an increased incidence of cancer and other harmful effects of ionizing radiation in humans at doses below 20 millisievert (mSv, see box p. 19), the annual limit for workers, and a dose that can occur in medical radiological examination. Some estimates put this figure much higher, up to 200 mSv, while others consider levels up to 10 mSv of significance for foetal exposure. This lack of evidence could point either to there being no harmful effect at such low levels of radiation, or that whatever health effects may occur are too few to be statistically significant.

The indicator of risk for health, the effective dose, however is an effective tool for many applications, but too indirect and limited in scope for environmental stress and patient exposure in radiology, where considerable limitations of the concept have been identified. Sensitive biological indicators of effects are being developed, but biological effects are not necessary indications of health effects.

Ionizing radiation as emitted by radioactivity is nothing other than a transfer of sufficient energy to a target atom for expelling one electron out of its orbital layer thereby creating an ionization event. The target of the radiation is always an atom. The atoms ionized are those most present in biological systems, like hydrogen and oxygen. The main target, by the law of probability, is the water molecule which represents about 80% of body weight. When water is irradiated, it is dissociated and converted into free radicals (Reactive Oxygen Species, ROS). This process is called water radiolysis. Radicals are highly reactive and give off their energy to their surroundings and damage other molecules, and ultimately DNA, the molecule that carries our genetic information.

DNA makes up only 1% of the total cellular mass and is therefore not highly susceptible of a direct radiation hit. This molecule is critical for cell life and any direct or indirect damage, if not adequately repaired, will have dramatic consequences.

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However, powerful and reliable biological cell control and DNA repair mechanisms exist. Un- or mis-repaired DNA induces an active genetic process that seeks to protect the organism by eliminating the cell through programmed cell suicide, called apoptosis. As a result, only cells that escape such biological controls and apoptosis can become transformed (cancerous).

In more than 80% of cases, the ionizing radiation effect comes down to damage by free radicals. Any other cause that produces free radicals – such as UV and active chemical agents like dioxins – will produce essentially the same biological effect as ionizing radiation.

DNA carries genetic information, and any DNA damage to a somatic cell, if not repaired, can be transmitted to the daughter cells. There are evidences that cellular responses can include genetic change because they can continue to occur (genetic instability) for longer periods over many cell generations. If the damage is caused to germinal cells, the possibility of genetic effects being passed on to unborn children must be considered. Currently available data indicate that the number of expected genetic effects after chronic exposure to 1 unit of Gray (Gy) is about 3000 to 4700 per million births. This is about 0.4 to 0.6% of the natural incidence of genetic effects. Over a lifetime, we in Belgium receive on average a fourth of this dose from medical diagnostic and natural exposure. The International Commission on Radiological Protection (ICRP) considers that thresholds exist for induced malformation during organogenesis, and also that there is no significant risk of IQ impact up to the lower tens of mGy exposure. Foetal effects are not taken into account during the pre-implant (earliest) period of pregnancy. Recent animal studies on both chemical and radiation exposure of genetically predisposed cases show that congenital malformations can occur due to mis-repaired DNA-damaged cells. They do not necessary lead to spontaneous abortion. Considerable uncertainty continues to surround the foetal effects and later cancer proneness associated with radiation induced genetic susceptibility.

The number of illnesses in which genetic factors play a role is high. Numerous studies show that radiosensitivity is linked to cancer proneness that depends on the individual genetic history. Radiation could trigger genetic susceptibility. Molecular biology allows analysis of the integrity of the DNA repair system that includes genes involved in recognizing and signalling the presence of injury and genes controlling a stop process of cellular division in case of DNA damage. This could enable radiosensitivity in individuals to be identified. Repair genes play an important role in cancer processes. The development of tests on their inability as gate-keeping cancer processes could enable higher-risk individuals to be identified.

Meanwhile, the ICRP focuses only on protection for the average man, ignoring individuals with a possible genetic susceptibility by ignoring precaution.

The regulation of low-dose risks and the social debate

Against such a background of increasing knowledge, scientific controversies normally remain on an academic plane. But estimation of the low-dose cancer risk where no evidence of effect can be proved remains the focus of debate and division between and among experts and action groups. At low doses, the risk is essentially estimated by extrapolation of the dose-effect curve obtained from high doses. This Linear No Threshold (LNT) model hypothesizes that risk decreases with dose on the precautionary assumption that any exposure may cause some risk. This has lead to the development of a consistent radiation protection philosophy: nuclear practices are only allowed if justified, and once justified or authorized, protection has to be optimized respecting dose limits as boundary conditions.

The advantage of such an approach is that a proven carcinogen is not black-listed but conditionally allowed for its numerous benefits for society, in particular in medicine.

When cancer is suspected as a potential effect, and when a risk estimation is needed for communication to a broader public, perception plays a key role for the lay person and experts alike. Perceptions differ among experts as much as the public and are influenced by distributive justice, interests and trust. This complicates communication with the public and development of expert approaches. Media focuses and diverging political views create defensive attitudes which can be explained by social theories on cognitive dissonance. Moreover, considerable interests are at play in the nuclear field – both in the energy and medical sectors – which add an economic value to low-dose effects (Eggermont, 2003).

Risk studies indicate that radiation is not highly carcinogenic compared to smoking and asbestos, and risk perception studies show no general public fear of radiation (Hardeman and Carlé, 2003). There is almost no concern about the quite high doses from medical applications or man-enhanced natural exposure (Vanmarcke *et al.*, 2004). By contrast, there is real concern about small, almost virtual long-term future industrial risks, such as from nuclear waste disposal. There is more tolerance of a potentially hazardous technology that delivers benefits than an imposed industrial hazard. This is also illustrated by the differing perceptions of microwave radiation risks from mobile phones compared to mobile phone masts.

The LNT model makes no claim to account for the full scientific complexity, but is a fairly simple tool for operational use. The implementation of present regulations is creating no major problems in a field where simplicity, stability and consistency are demanded.

Recent epidemiological results clarify the issue and support the LNT hypothesis

Recent advances in molecular biology will do much to dispel uncertainties in future, but their application could give rise to ethical issues if genetic susceptibility of individuals to ionizing radiation is demonstrated at the workplace. Biomarkers are specific measurements of an interaction between a biological system and an environmental agent, indicating either exposure, effect or susceptibility.

For most international scientific experts, as represented at UN level, the LNT model remains the best fit to data and its associated uncertainties; it is a kind of precautionary rationality and a common sense choice. The polarization of opinions between believers and non-believers in low-dose effects overshadows peer reviewed scientific references at international level, as represented by UNSCEAR, NAS and BEIR[1].

The French academy and some professional medical organizations are fiercely opposed (Tubiana *et al.*, 2005) to the fundamentals of existing regulations, while scientists with opposing views have organized themselves in an international network (ECRR)[2] claiming that high risks exist even at low doses. Worker exposure to ionizing radiation is a big issue in the medical sector and air flight companies while environmental issues are predominant in the nuclear power industry.

The clear-up costs of former military contaminations featured in the US Congress debates on low-dose risks: setting a threshold could help to minimize costs, and this could also benefit the decommissioning of civil nuclear power plants in future.

The French academy seems more concerned that new technological developments in medicine should not be held back by low-dose concerns. On the other hand, however, they are faced with high deterministic doses for patients and medical staff in new practices like interventional radiology, where optimization based on LNT could help. From LNT comes the ALARA (As Low As Reasonably Achievable) principle, today a basis of radiation protection. We would argue that this policy has proved its usefulness and success, and should be kept as long as no reliable scientific evidence impels a change. Especially so as the policy can be considered as a precautionary approach.

New epidemiological evidence supports the LNT hypothesis

International epidemiological research on the health effects of low-dose ionizing radiation has advanced in a textbook way through dose estimations of exposed populations. Two studies were recently published, one by the UN WHO International Agency on Research on Cancer (IARC) (Cardis *et al.*, 2005) and an EU initiative on the effects of exposure to indoor radon (Darby *et al.*, 2004).

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), the ICRP and the US National Academy of Sciences (BEIR VII) reviewed scientific progress worldwide, and recently came to conclusions that still support a linear non-threshold hypothesis as the best fit to assess and manage low level exposure to ionizing radiation in the current context of uncertainty.

This international peer review of the science, however, is taken issue with both by the French Academy of Sciences, which dismisses low-dose effects, and by a new international network of scientists which postulate increased effects at low doses (ECRR).

What do recent epidemiological findings teach us? The IARC conducted a collaborative study of more than 400 000 nuclear industry workers worldwide with past exposure to ionizing radiation (see table p. 24). This cohort study was carried out in 15 countries to further improve the precision of direct estimates of risk after protracted low dose exposures and to strengthen the scientific basis of radiation protection. It presents risk estimates for mortality from all cancers, excluding leukaemia, and from leukaemia excluding chronic lymphocytic leukaemia and compare them with estimates derived from data on survivors of the A bomb.

The exposed group essentially comprises men (90%) while recent data on radiation-induced thyroid cancer shows a higher risk for women, especially for those exposed during childhood. The mean cumulated dose of the worker cohort was low, only 19.4 mSv; 90% received doses below the former occupational dose limit of 50 mSv.

The IARC study is a major scientific complement to the still ongoing follow-up of the Hiroshima-Nagasaki data on bomb survivors. The results as summarized in the *British Medical Journal* are as follows (Cardis *et al.*, 2005): "The excess relative risk for cancer other than leukaemia and from leukaemia was 0.97 per Sv, 95% confidence interval 0.14 to 1.97. Analyses of causes of death related or unrelated to smoking indicate that, although confounding by smoking may be present, it is unlikely to explain all of this increased risk. The excess relative risk for leukaemia excluding chronic lymphocytic leukaemia was 1.93 per Sv (< 0 to 8.47). On the bases of these estimates, 1-2% of deaths from cancer among workers in this cohort may be attributable to radiation."

These estimates, from the largest study of nuclear workers ever conducted, are higher than, but statistically

[1] UNSCEAR: United Nations Scientific Committee on Effects of Atomic (Ionizing) Radiation; NAS: National Academy Sciences, USA; BEIR: Biological Effects Ionizing Radiation, USA. See: www.nap.edu/books/030909156X/html.

[2] European Committee on Radiation Risks; see: www.euradcom.org.

Risk of cancer after low doses of ionizing radiation: retrospective cohort study in 15 countries

						Deaths				
	No. of facilities	First year of operations	Follow-up period	No. of workers	Person / years	All causes	All cancers excluding leukaemia	Leukaemia excluding CLL	Collective cumulative dose (Sv)	Average individual cumulative dose (mSv)
Australia	1	1959	1972 - 1998	877	12,110	56	17	0	5.4	6.1
Belgium	5	1953	1969 - 1994	5,037	77,246	322	87	3	134.2	26.6
Canada	4	1944	1956 - 1994	38,736	473,880	1,204	400	11	754.3	19.5
Finland	3	1960	1971 - 1997	6,782	90,517	317	33	0	53.2	7.8
France CEA-COGEMA	9	1946	1968 - 1994	14,796	224,370	645	218	7	55.6	3.8
France EDF	22	1956	1968 - 1994	21,510	241,391	371	113	4	340.2	15.8
Hungary	1	1982	1985 - 1998	3,322	40,557	104	39	1	17.0	5.1
Japan	33*	1957	1986 - 1992	83,740	385,521	1,091	413	19	1,526.7	18.2
Korea (south)	4	1977	1992 - 1997	7,892	36,227	58	21	0	122.3	15.5
Lithuania	1	1984	1984 - 2000	4,429	38,458	102	24	1	180.2	40.7
Slovak Republic	1	1973	1973 - 1993	1,590	15,997	35	10	0	29.9	18.8
Spain	10	1968	1970 - 1996	3,633	46,358	68	25	0	92.7	25.5
Sweden	6	1954	1954 - 1996	16,347	220,501	669	190	4	291.8	17.9
Switzerland	4	1957	1969 - 1995	1,785	22,051	66	24	0	111.2	62.3
UK	32	1946	1955 - 1992	87,322	1,370,101	7,983	2,201	54	1,810.1	20.7
US - Hanford	1	1944	1944 - 1986	29,332	678,833	5,564	1,279	35	695.4	23.7
US - INEL	1	1949	1960 - 1996	25,570	505,236	3,491	886	26	254.6	10.0
US - NPP	15	1960	1979 - 1997	49,346	576,682	983	314	19	1336.0	27.1
US - ORNL	1	1943	1943 - 1984	5,345	136,673	1,029	225	12	81.1	15.2
TOTAL	**154**	**-**	**-**	**407,391**	**5,192,710**	**24,158**	**6,519**	**196**	**7,892.0**	**19.4**

CEA-COGEMA: Commissariat à l'Energie Atomique – Compagnie Générale des Matières Nucléaires; **EDF:** Electricité de France; **NPP:** Nuclear Power Plants; **INEL:** Idaho National Engineering Laboratory; **ORNL:** Oak Ridge National Laboratory; **CLL:** Chronic Lymphocytic Leukaemia.
* No information available to allow separation of different facilities.

Source: Cardis, E., *et al.*, 2005

compatible with, the risk estimates used for current radiation protection standards. The results suggest that there is a small excess risk of cancer, even at the low doses and dose rates typically received by nuclear workers in this study.

The confounding effect of smoking was considered in first approximation, yielding only a significant higher risk for lung cancer (ERRor: 0.3 - 4.0 / Sv)[3]. The relevance of this study is that it confirms the LNT hypothesis, with a broad confidence level, except for leukaemia where a quadratic hypothesis was already made. For solid tumours, mortality was estimated two to three times higher than the linear hypothesis from the Hiroshima-Nagasaki data, yielding a 1-2% attribution of cancer deaths to ionizing radiation, which remains a low risk compared to that of some other carcinogens.

The second set of epidemiological data concerns indoor exposure to radon. After earlier epidemiological studies on miners, the more recent case control studies of radon-induced lung cancer in the home were analysed together in the EU, and in the USA and China.

The results for the EU were: "The mean measured radon concentration in homes in the control group was 97 Bq/m^3... For cases of lung cancer the mean concentration was 104 Bq/m^3. The risk of lung cancer increased by 8.4% (95% confidence interval 3.0% to 15.8%) per 100 Bq/m^3 increase in measured radon (P=0.0007)... The dose-response relation seemed to be linear with no threshold and remained significant (P=0.04) in analyses limited to individuals from homes with measured radon < 200 Bq/m^3... In the absence of other causes of death, the absolute risks of lung cancer by age 75 years at usual radon concentrations of 0, 100, and 400 Bq/m^3 would be about 0.4%, 0.5% and 0.7%, respectively, for lifelong non-smokers, and about 25 times greater (10%, 12% and 16%) for cigarette smokers."

Collectively, though not separately, these studies show appreciable hazards from residential radon, particularly for smokers and recent ex-smokers, and indicate that radon is responsible for about 2% of all deaths from cancer in Europe.

The EU collaborative analysis yields a risk estimation of this indoor environmental exposure of 20 000

[3] More than 5 000 cases of thyroid cancer have been identified in young people in the environs of Chernobyl to date, mostly exposed to high doses (~ 1 Gy), but with a lower-than-expected mortality.

lung cancers a year in Europe. This means that 2% of the total number of cancers in Europe could be radon-related, but with a broad margin of uncertainty. Again, the results indicate that effects could occur at relatively low concentrations, frequently found in Europe from 100 Bq/m³ on, corresponding to a dose of 2-3 mSv/y, and support linearity as the most plausible model, and that at lower levels than previously suggested.

Multi-factorial exposure and ethical concerns

Smoking was a confounding factor in both studies. Simultaneous exposure to different agents at work or in the environment is a daily reality which complicates the study of the effects of these agents. Synergistic effects were already demonstrated in uranium miners and also with UV exposure.

A bigger focus should be placed on multi-causality in risk assessment and management. It could have considerable implications for the evaluation of scientific evidence of hazards. This was recently argued by the Director of the European Environment Agency (EEA): "Multi-causalities could cause a kind of network perturbation generated by small, almost imperceptible, changes in lots of genes. The removal of small environmental co-causal factors can have a real sense not only for cancer, but as already clearly demonstrated, for diseases like asthma" (McGlade, 2005).

The difficulties of exposure assessment as discussed above for radiation exposure could be overcome with new technological opportunities to identify genes interacting in disease processes. The causes of a common disease like cancer seem to be the result of dependent actions of multiple agents. The revival of a co-causal or interaction factor could have substantial beneficial effects in prevention. Therefore it recently became a priority for the EEA.

In this context, the focus should shift from attributing probability of causation to individual factors to developing a more precautionary approach towards our present uncertainties and lack of knowledge.

Epidemiology was the historical reference for risk assessment and management in identifying hazardous factors and the risks of exposure to them. It will continue to play a dominant role if subjected to methodological scrutiny, such as at the IARC level.

Future trends in epidemiology could lead to fingerprinting exposure through biomarker techniques borrowed from molecular biology. They might offer more direct indicators of risk. Sensitivity at low doses, however, is still a constraint.

Genotyping at work is not permitted in many countries due to its uncertainties and ethical implications. But the study of some repair genes of workers in nuclear power plants has already yielded information on individual sensitivity for workers at risk of oxidative damage, like smokers exposed to radiation (Aka, 2005).

Conclusions

Advancing knowledge about the health effects of low-dose ionizing radiation supports the use of a linear non threshold hypothesis for the dose-effect relationship and can be regarded as a precautionary approach for the dose range of occupational exposures.

Particular attention should be paid to genetic susceptibility and the ethical issues of genotyping. Higher exposures among medical imaging staff (interventional radiology and PET, possibly combined with CT) and medical exposure of children are also particular concerns.

Exposure of outside workers in the nuclear and non-nuclear industries and in medical settings requires appropriate management and follow-up. Systematic optimisation of protection can be of major assistance here, as has been demonstrated in nuclear power plants.

It illustrates how the linear non threshold hypothesis can be combined with operational flexibility and health protection. ■

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Radiological protection of outside workers

Who are they under the Community directive?

Directive 90/641 defines an outside worker as any worker (category A), whether employed temporarily or permanently by an outside undertaking, including apprentices, trainees, students and self-employed service providers, who performs activities in a controlled area and is likely to receive an effective dose above 6 mSv/year.

What obligations do outside undertakings and operators have to such workers?

Outside undertakings must, either directly or by contractual agreement with operators, ensure the radiological protection of their workers. The operator of a controlled area is responsible for the operational aspects of the radiological protection of these workers.

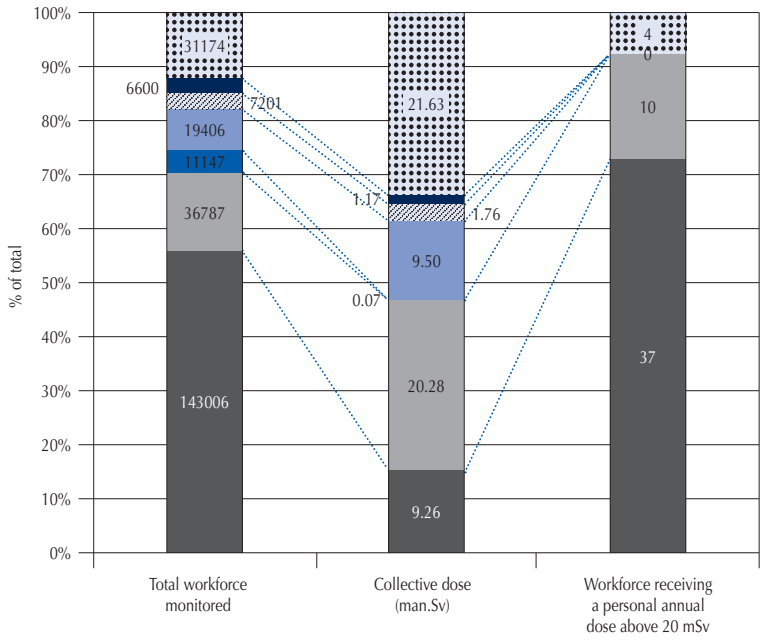
What obligations do States have?

Member States must subject outside undertakings to reporting or authorisation requirements, according to the activities, set up a radiological monitoring system and issue an individual document. The directive lays down the particulars that such a document must contain, and the principles for its use by operators or monitoring authorities, such as the procedure for updating it after each activity performed.

How many workers are covered by these provisions in Europe?

No report has yet been published on the implementation of this directive. Recently, however, the Commission asked the French centre for research into nuclear protection assessment (CEPN)[1] to carry out a survey on the implementation of the directive.

France: outside worker exposures in 2004



- Outside service providers (monitored by IRSN and LCIE)
- Workers in CEA facilities monitored by the IRSN laboratory
- Workers in Cogema facilities monitored by Cogema laboratories
- EDF (staff – monitored by LCIE)
- Research/IPN/CNRS/IreS
- Industry – workforce classed as "non nuclear" and "general"
- Medical and veterinary activities

IRSN: Institute for Radiological Protection and Nuclear Safety
LCIE: Conformity Testing and Assessment Agency
CEA: French Nuclear Research Agency
EDF: French National Power Company
IPN: Institute of Nuclear Physics
CNRS: National Council for Scientific Research
IReS: Subatomic Physics Research Institute

Source : IRSN, Rapport DRPH/ 2005-09

[1] Centre d'étude sur l'évaluation de la protection dans le domaine nucléaire, www.cepn.asso.fr.

The findings of that study have not yet been published, and the word is that the study has turned up a number of difficulties in the form of inconsistencies between the texts of the two directives relating to the definition of outside undertakings and national differences in implementation: coverage only of category A workers or both categories, limitation to the nuclear sector or coverage of all sectors, in particular the medical sector, and non-destructive testing.

The data supplied by Member States for the CEPN study are posted on the Esorex[2] site. These show significant variations between the figures sent in and those published nationally for some countries. France, for example, reports 17 000 outside workers, whereas the French institute for radiation protection and nuclear safety (IRSN)[3] assessment of radioprotection for workers in 2004 reports 31 174 outside workers monitored.

What dose?

Esorex has published the first European review of occupational exposure trends between 1996 and 2000; it finds that the average annual personal dose decreased from 2.2 mSv to 1.5 mSv and that the collective dose decreased in the same proportion. The only sector differentials are that average annual exposure decreased less in "general industry" than in the nuclear industry, where the dose is 1.8 mSv. The study lists only three sectors (medical, nuclear, general industry), so "general industry" therefore covers outside undertakings in particular.

The IRSN provides additional details on these exposure inequalities between the different categories of workers. It reports that 35% of outside workers received doses higher than 1 mSv/year. The highest doses (5 mSv/year) were received by employees of subcontractor firms working on nuclear power plant unit outages, compared to doses of about 3.5 mSv/year received by contractors for the French nuclear research agency Commissariat à l'Énergie Atomique.

The IRSN also provides further information on inequalities in the different sectors of activity. Most monitored workers are in the medical and veterinary sector which, while accounting only for 15% of the collective dose, includes the most exposed workers. The agency reports that workers employed by nuclear power plant operators receive the same collective dose, but there are seven times fewer of them, and none received a dose above 20 mSv in 2004 (7 medical and veterinary workers received doses above 50 mSv). Workers in sub-contractor and general industry undertakings receive the highest collective doses – over half the total collective dose – whereas personnel make up 26% of the total monitored workers.

The report notes that the nuclear industry has made progress in reducing collective doses since the end of the 1990s, but that following a decrease in the 1990s, the number of doses[4] above 20 mSv has still remained unchanged in three sectors: medical, subcontractors for operators and general industry.

Conclusions

Even from the available data, it can be said that outside workers receive higher doses than workers employed by nuclear power plant operators. So, having a specific directive for outside workers has not so far delivered the same level of protection to all nuclear power workers. The basic directive needs amending to cover all workers and to make a reference back to the framework directive which provides rights for all workers. Work specifiers' responsibilities to sub-contracting firms also need clarification. ■

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[2] www.esorex.cz.
[3] Institut de radioprotection et sûreté nucléaire, *Radioprotection des travailleurs. Bilan 2004*, www.irsn.org.
[4] Averaging 50 to 100 workers a year.

France: nuclear industry subcontractors still at risk

Michel Lallier is secretary of the health, safety and working conditions committee at the Chinon nuclear power station in France's Loire Valley. As a nuclear industry specialist for France's CGT central labour confederation, he organised the 2002 symposium on "nuclear power and man".

The IARC study reports only 1 to 2% of cancer deaths among nuclear industry workers from exposure to low doses of ionizing radiation. Isn't this good news?

Many exposed workers in the nuclear industry were excluded from the cohort for the French part of the study because they work for sub-contractors. The French cohort consists exclusively of Electricité de France (EDF) and Commissariat à l'Énergie Atomique (French nuclear research agency – CEA) employees. But for the past twenty-odd years, 80% of the doses in the nuclear power industry have been received by subcontractors. So the French cohort comprises only the least exposed workers.

I also see a bit of spin on the way the overall results for the 15 countries covered are presented. The Euratom Directive refers to ICRP 60[1] to set the standards in force in the European Union. ICRP 60 assesses the risk of death from cancer at between 4 and 5% for 1 000 mSv, which amounts to exposure to a dose of 20 mSv/year over 50 years. But the IARC study gives a finding of 1 to 2% for 100 mSv, i.e., for a total exposure one-tenth of that. As ICRP 60 recognises a linear effect, the conclusion has to be that 1 to 2% for 100 mSv equates to a risk of 10 to 20% for 1 000 mSv. That is obviously a whole different ball-game.

How can the interpretations of these figures be so different?

The ICRP studies assessing the cancer death risk at 4 to 5% have so far been based on the epidemiological studies done on survivors of the Hiroshima and Nagasaki bomb blasts, i.e., populations exposed to high dose ionizing radiation, whereas the IARC study evaluates the risk based on observations of workers who all received low doses. The CGT feels that the results of the IARC study therefore more accurately reflect the workplace realities than the ICRP 60 projections, and this is why it wants the current exposure standard of 20 mSv/year to be cut to a third or a quarter of that level, because the risk as estimated by the IARC study is three to four times higher than the ICRP 60 estimates.

What about the situation of outside workers in the French nuclear industry?

There has been some progress over the past decade. The number of employees at or above the dose limit has fallen sharply. On the other hand, the number of employees at the upper level of the standard, between 10 and 15 mSv/year, has risen. A lot still needs to be done to get these figures below the 10 mSv/year mark.

As regards insecure workers, things have changed. In the 1990s, between 20 and 25% of sub-contract firm staff were contingent workers. That figure is now between 15 and 20%. But 50 to 60% of these casual workers are employed on nuclear industry services work (decontamination, lagging and jacketing, scaffolding, cleaning, etc.) where radiation exposure is high. So while average insecure employment is down, the figures are still very high for the most exposed job sites.

In fact, insecure workers – those on temporary and fixed term contracts – are now prevented by French law from working in limited stay and prohibited areas. But this has very little effect because very few people at all do work in these areas. Between 90 and 95% of doses in the nuclear power industry are received in regulated stay areas. And many types of contract that are classed as unlimited term contracts are actually highly insecure. The "new job contract" (CNE – which allows a small employer to hire and dismiss people before they have worked for two years without having to provide grounds for dismissal) is a case in point. Use of so-called "duration of site" contracts is also very widespread. In strict law, these are unlimited term contracts, but in reality these contracts that last just for the duration of a work site are highly insecure. I have personally witnessed employees on supposed unlimited term contracts working for just seven hours before being sent on other jobs… These employees may be working in limited stay areas.

Can you make an "identikit picture" of workers that receive high doses?

They tend to be low- or unskilled employees working for nuclear industry servicing firms. They are "captive" nuclear industry workers, by which I mean that they cannot offer their services on other markets because their employment is tied to nuclear industry activities. The odd times when they are not working on nuclear sites, they are stripping asbestos or cleaning chemical plants because their employers specialise in high-risk work. So they are exposed to a vast range of carcinogens. We are deeply concerned about these workers. A confidential EDF survey has found that 84% of employees working for subcontractors want to get out of the nuclear industry because of poor living and working conditions. ■

Interview by **Denis Grégoire**, dgregoire@etui-rehs.org

[1] In 1990, the International Commission on Radiological Protection (ICRP) completely redefined the radiological protection system recommended in its Publication 60.

United States / European Union

VPPs: a dangerously misleading charm offensive

For some years, the United States federal authorities – and especially the occupational safety and health administration (OSHA) – have been hard-selling their Voluntary Protection Programme (VPP) scheme to other countries.

To date, only Ireland and Northern Ireland have officially signed up to this kind of programme in Europe. At a joint European Union / United States health and safety conference in September 2005, the US representatives again urged the importance of working together on VPPs. They are pushing for European national health and safety inspectorates to adopt a recognition system for firms that apply them. So the question has to be: why all the fuss about VPPs?

A hang-over from Reaganism revived by Clinton

VPPs first appeared in 1982 as part of a Reagan administration-sponsored federal programme to deregulate health at work. A precursor had already running in the State of California since 1979, but with Reagan's election to President (1980), VPPs were extended to all States in the Union. The programme was slow to take off in the first decade, rarely adding more than a dozen new sites in any year. The first hundred site mark was reached only in 1992. In 1995, the new Clinton administration launched its "reinventing government" initiative, announcing that OSHA would change "its fundamental operating paradigm" to give employers a choice between partnership and traditional enforcement[1]. From 1995, the programme expanded much more rapidly, with a five-fold increase in the number of participating sites during Clinton's two terms.

The essence of VPPs is that firms which maintain good health and safety records are allowed to escape routine HSW inspection other than in special circumstances, like a complaint by workers or a fatal accident. Sites sign up to the programme individually, and those that do must put in place a health and safety management system. OSHA audits the contents of the initial programme, and has a full onsite evaluation done by a team of specialists. Participating sites must provide figures on the trend in reported work injuries and recognised occupational diseases. Broadly speaking, the figures must show that the site has stayed below the industry average for the past three years. Sites have to carry out an annual internal review of system operation. Sub-contractors working on the site are generally included in the programme.

Sites are performance-rated against the VPP criteria as "Star" (the best), "Merit" and "Star Demonstration".

Putting an HSW management system in place does not necessarily mean setting up a health and safety committee with workers' reps. Anti-union firms can perfectly well get a VPP "Star" rating simply by putting in place informal participation mechanisms. Such "direct participation" schemes are often closer to consensus and disciplinary control mechanisms. OSHA's own figures show that only a quarter of VPP participating sites and barely 15% of sub-contracting firms have trade union representation[2]. What makes this particularly worrying is that VPP sites tend to be fairly large: about half employ more than 200 workers.

These programmes have enjoyed huge success in the United States, with now over 1 450 VPP participating sites against 122 in 1993. The two best-represented sectors are manufacturing industry (21% of VPP participating sites in September 2003) and the chemical industry (20%). Cost-cutting is one secret of its success, and in fact is the big argument used by OSHA to promote this voluntary programme. It claims that VPP participating firms saved 130 million dollars in 1999, not least from savings in compensation payouts for work-related accidents or diseases. It is not clear from the calculations whether all these savings result from less health damage, or if they are also due to a more widespread under-reporting of certain accidents or diseases.

OSHA's appetite knows no bounds. Since 1998, VPPs can now be run in the federal civil service. In October 2004, an agreement was reached between OSHA and the army to extend VPPs to military sites, among other things. In August 2005, an OSHA official, Jonathan Snare, floated the possibility of extending the programme to US armed forces' combat operations in Afghanistan.

Blurring the roles between labour inspectorates and employers

Most VPP participating firms are big companies, including multinationals with sites in many countries, for whom the VPP also serves as a tool for proactive lobbying of OSHA. These firms are linked together in the VPPPA, the powerful VPP Participants Association, which systematically intervenes to see that OSHA policymaking reflects the employers' agenda. The VPPPA's role is illustrated by the thwarting of any attempt by OSHA to call time on practises that encourage the non-reporting of work injuries (see box, p. 30).

[1] Cited by C. Estlund, *Reconstituting the law of the workplace in the era of self-regulation*, Berkeley Electronic Press, No. 367, 2004.

[2] The figures published by OSHA in January 2006 are only for federal VPPs (which make up over 70% of all VPPs). Other VPPs are concluded for individual States.

Ignore an accident – win a prize

In the United States no less than Europe, many employers are keen to cut the costs of work accident insurance (or corresponding social security contributions). One way is to promote "zero accident" campaigns through company competitions, whereby the team or department with the best no-reported-accidents record wins cash bonuses or gifts. In this way, injured workers are often pressured by their own workmates not to report an accident.

In 1998, having found that most had introduced incentive programmes that rewarded workers for not reporting accidents, OSHA sought to stamp out this kind of practice in VPP participating sites.

The plans met with harsh criticism from the VPPPA, the VPP Participants Association, whose executive director wrote to OSHA accusing it of applying the draft policy "prematurely and incorrectly". OSHA withdrew the initiative in September 1998.

In the same year, it published the results of its literature review on safety incentive games. The report concluded that these programmes which "focus on reduction in the number of injuries and illnesses do not improve safety practices". Where incentives are used, they act as a disincentive to workers to report accidents. On the basis of this report, OSHA could have pursued its course of action to ban safety incentive games in VPP sites. It did not.

Source: James Frederick and Nancy Lessin, "Blame the Worker. The Rise of Behavioral-Based Safety Programs", *Multinational Monitor*, November 2000, vol. 21, No. 11.

The overlap between private and public interests also appears with the creation of a "special government employees" unit (SGE), a body of experts attached to OSHA (whose main task is labour regulations enforcement) while being on the staff of VPP participating private firms. Their salaries are paid by the company, and their training is part paid for by OSHA. In August 2005, there were 585 SGEs. According to OSHA, one express idea behind the creation of the SGE unit is that it gives industry and government an opportunity to work together and share views and ideas.

OSHA has a team of 65 consultants tasked with providing information and promoting voluntary programmes. Most of these specialists were previously engaged in conducting workplace inspections. What this reveals is a trend towards the part-privatisation of the labour inspectorate's composition and duties (consultancy designed to help boost business profits). The United States' refusal to ratify International Labour Organisation Convention 81 denies the labour inspectorate a basic standard which would help safeguard its public service mission.

Missionary zeal

Up to a few years ago, VPPs were peculiar to the United States. Since 2000, the Bush administration, OSHA and VPPPA have been effectively evangelizing to spread the good news worldwide. Or, more specifically, to countries where participating multinational firms are big investors. The campaign is being waged on two fronts.

Multinationals that run a VPP in the United States are trying to export the idea to other parts of the world. General Electric, for instance, has secured VPP certification for 127 of its sites, especially in Brazil, Canada, Malaysia, Singapore, Mexico and at least seven European Union countries (Hungary, Austria, Italy, Ireland, Spain, United Kingdom and the Netherlands). This has several clear benefits for the management of these multinationals. It lets them pursue a more centralised health and safety policy largely outside the individual country's specific requirements. It is a good basis for introducing a system shaped by the US labour relations model: low trade union participation (or even a non-union shop), a business case-based health and safety policy that tends to disregard long-term health problems. The extension of VPPs is also an argument for "relaxing" national regulations, portrayed as potential roadblocks to foreign investment. VPPs could be instrumental in the creation of "free zones" where multinationals are partially relieved of labour inspections.

These private industry initiatives have since 2002 been boosted by the federal administration and in particular by OSHA management through contacts struck up in Mexico and Canada. OSHA Administrator John Henshaw emphasized the importance of VPPs on a trip to Mexico in November 2002. The mutual recognition of voluntary programmes like VPPs forms part of the Trinational Occupational Health and Safety Programme for 2005 concluded between the United States, Mexico and Canada. In March 2004, a joint Ireland and Northern Ireland delegation was invited by OSHA to consider an agreement on VPP recognition. OSHA also reports the existence of a VPP research partnership with the Finnish Institute of Occupational Health (FIOH).

A wonder cure

OSHA puffs the results of VPPs with all the conviction of a used car salesman. Every dollar invested

will earn sites six dollars in saved costs. VPP participating sites have an accident rate half their industry average.

This hard sell raises a series of issues:

1. It is not easy to determine whether VPPs make firms perform better, or whether it is firms that already run better-performing HSW systems who sign up to VPPs.

2. The figures come from the firms themselves. There is no enforcement action to address under-reporting of work-related accidents and diseases.

3. Long-term health effects are all-but absent from the VPP indicators. The main indicator is total sick days due to work injuries and occupational diseases, which excludes long latency health damage and that which does not necessarily involve time off (reproductive health disorders, for example). That may add to pressure on workers to make the earliest possible return to work.

4. There is no assessment of preventive practices as such. More workers in industrialised countries now die of work-related cancer than work accidents. Evaluating cancer prevention practices would involve assessing the priority given to replacing carcinogens with safer substances. But there is no such indicator anywhere in the VPP literature. These voluntary programmes leave employers a generally free hand in setting prevention priorities. The business case emphasis is not really apt to promote long-term risk prevention.

5. There are cases of firms being awarded VPP Star status despite being in flagrant breach of their prevention obligations. The multinational WR Grace is one such. Several of its managers were charged in February 2005 with concealing information on asbestos use in the firm's production at Libby (Montana), nearly 1 200 of whose population are suffering from asbestos-related health problems[3].

Preventive practices

In VPPs, the health management system is employer-defined. OSHA's directives mainly cover the standard elements of a management system (policy definition, information flow, record-keeping, appointment of responsible officials, used of qualified personnel, etc.). They go into little detail on the basic requirements of a prevention policy. They do not, for instance, set a strict order of priority in preventive measures that would require risks to be eliminated insofar as it is technically possible. Employers are left wide discretion to decide how to act between risk elimination (e.g., substitution of dangerous substances) and less radical enforcement measures. Also, the system provides for disciplinary measures against workers who do not follow the directives, but does not require a thorough investigation of why they did not do so.

Accident prevention in most VPP participating sites tends to be organized as what is called "behavioural safety"[4]. This big money-spinning trend is characterised by a simplistic approach to good and bad behaviour by individual workers. Accidents or incidents are blamed on workers for not sticking to the prescribed rules. "Behavioural safety" tends to steer away from any holistic analysis of work organisation. Faced with a discrepancy between actual work and prescribed work, it shies away from asking key questions like "were the instructions doable?", "did they conflict with production requirements?", "were they in line with the actual work?". It is telling that the consultants who are pushing this trend are trying to win business by playing up the savings to be made from defeating compensation claims from injured workers. Behavioural safety marks a substantial step backwards towards an individualistic and disciplinary approach to safety at work.

Resources: to those that have, shall be given...

When operating under a VPP, health and safety inspectors act as consultants. They make no attempt to enforce rules or penalize breaches. Most participating firms are large companies, and so get free expertise. OSHA staff's onsite evaluations take a team of three to five people an average of one week to perform, and are repeated at regular intervals (every one to five years, depending). Carrying out programme evaluations of 1 200-plus firms puts a heavy drain on OSHA's resources for tasks outside its main remit. This aspect of the programme has caused concerns in the United States. The General Accounting Office (the federal public accounts watchdog) published a fairly critical report on OSHA's voluntary programmes in 2004[5], in which it opined that, "The resources OSHA devotes to its voluntary compliance strategies consume a significant and growing portion of the agency's limited resources. In fiscal year 2003, OSHA executed its numerous programs under a $450 million budget. The agency spent $126 million on its voluntary compliance programs and compliance assistance activities — approximately 28% of its total budget — and about $254 million, about 56% of its budget, on enforcement activities. The percentage of resources dedicated to voluntary compliance programs and compliance assistance activities has increased by approximately 8% since 1996, when these programs represented about 20% of the agency's budget. During this same period, the proportion of resources OSHA dedicated to its enforcement activities fell by 6%, from about 63% to about 56% of the agency's total budget, although the total funds devoted to enforcement have remained fairly constant because of increases in OSHA's total budget over this period. In addition, enforcement efforts, as measured by the number of inspections, have remained constant or increased slightly each

[3] OSHA Recognizes W.R. Grace for "Exemplary Occupational Safety and Health", *Confined Space*, 23 August 2005.

[4] For a critical analysis of behavioural safety, see: A. Hopkins, What are we to make of safe behaviour programs?, *Safety Science*, 2006 (forthcoming).

[5] GAO, *OSHA's voluntary compliance strategies show promising results, but should be fully evaluated before they are expanded*, Washington, March 2004. See: www.gao.gov/new.items/d04378.pdf.

year, according to agency officials. While it cannot be determined that resources were directly redistributed from enforcement to compliance assistance activities, funding for OSHA's other programs remained relatively stable, with only small increases or decreases in funding since 1996".

These figures need to be examined against the total workforces employed in VPP participating firms or those actively engaged in another type of voluntary programme. Available figures for 2003 suggest that 2.3 million workers are affected by VPPs, the Strategic Partnership Program and States Consultation Program. But OSHA is meant to give coverage to more than 100 million workers, which raises reasonable questions about OSHA's budget priorities. The policy commitment to promoting an inspection system favourable to employers' interests has in fact produced an indirect wholesale subsidizing of big business. Pace their propagandists, VPPs do not help redirect resources towards the sectors most in need.

No independent evaluation

The General Accouting Office report also notes that the glowing VPP performance reports by participating firms and OSHA have not so far been corroborated by systematic evaluations done by independent experts:

"OSHA's voluntary compliance programs have reduced injuries and illnesses and yielded other benefits, according to participants, OSHA officials, and occupational safety and health specialists, but the lack of comprehensive data makes it difficult to fully assess the effectiveness of these programs. Participants we interviewed in the three states and nine worksites we visited told us they have considerably reduced their rates of injury and illness. They also attributed better working relationships with OSHA, improved productivity, and decreased worker compensation costs to their involvement in the voluntary compliance programs. However, much of the information on program success was anecdotal, and OSHA's own evaluation of program activities and impact has been limited to date. OSHA currently does not collect complete, comparable data that would enable a full evaluation of the effectiveness of its voluntary compliance programs".

The bigger picture

Improving working conditions at home has never been a priority for the Bush administration. Bowing to industry lobbies, it has gone all-out to deregulate[6], not least of all by blocking the enacting of a new regulation on musculoskeletal disorders.

Its international approach has been little different. Its strong-arming of the European Union to water down the scope of the chemicals reform (REACH) and the US representative's abstention on including chrysotile asbestos in the prior information and consent procedure before being exported suggest that OSHA managers' claims that the international expansion of VPPs reflects a commitment to improving workers' health and safety should be taken with a largish pinch of salt.

In June 2005, the United States government voted against the adoption of an International Labour Organisation Convention for a Promotional Framework for Occupational Safety and Health[7], one strand of which is the need for a management systems approach to health and safety. The US government wanted a simple non-binding declaration.

The current campaign to push VPPs needs to be seen in the more general setting of a particular vision of international relations. The Bush administration systematically pursues a one-sided approach in which the US government, business and nationals should not necessarily be governed by the same rules as the citizens of other States. In some way it bespeaks a desire to devise an extraterritorial status for the United States alone. This is reflected, for example, in the demand for United States citizens to have immunity from prosecution for war crimes in the International Criminal Court, among other things. ■

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6 See: "USA: occupational health under the first Bush administration, 2002-2004", *HESA Newsletter*, No. 27, June 2005, p. 28-30.

7 The adoption of which is an agenda item for the next International Labour Conference in June 2006.

Italy: trade union action-oriented research into occupational diseases

Walter Schiavella *

A middle-aged, medium-build, able-bodied native Italian-speaking adult male with at least basic secondary education: this stereotype is the worker on whom assumed health risks and prevention policies are based.

This means that everything from assessments of exposure to hazardous chemicals, machine parts etc. through job and safety provision design to research into the links between diseases and work is calculated and patterned on this "standard" worker.

For those who do not fit that model – especially women – standards of workplace prevention are alarmingly low. This "male-centric" approach to prevention puts little focus on women's work-related diseases, and this is clear to see both in compensation and prevention of occupational diseases. Disorders suffered by women workers are often dismissed as "women's problems" rather than production issues. In many cases, the women workers themselves may not be aware of the linkages between certain disease entities and their work.

These considerations prompted the Preventive Health and Safety Department and Women's Coordination Committee of the Rome and Latium section of the Italian General Confederation of Labour (CGIL) to carry out a joint inquiry with INCA[1] and the Pomezia Labour Federation into occupational diseases in the Pomezia/Castelli region. The survey was designed specifically to highlight women's situations, and was carried out with assistance from over 900 workers – two thirds of them women – in the food processing, mechanical engineering, retail and catering industries, education, the cleaning and chemical industries, the (private) health sector, and the telecommunications and textile industries.

The research findings were presented on 13 June 2005 at Nepi, where representatives of the Latium Region, the Province of Rome, INAIL Latium, public health agencies[2] and Laurent Vogel of the ETUI-REHS, were present.

The survey reply rate exceeded expectations, with a 65% questionnaire return rate (910 completed out of 1 400 sent out) – double the percentage normally expected in this kind of survey, even given that participants were self-selecting. The results are due to the particular methodology used. The whole process from the choice of questions to ensuring that the wording was understandable was run in close cooperation with workplace union reps.

Initial data analysis revealed a general under-estimation of work-related risks, especially for some jobs involving repetitive movements or intense physical strain. The findings bear out literature reports, therefore, but also turned up evidence that requires further exploration:

- a high incidence of thyroid gland disease in the chemical-pharmaceutical sector;
- blood and circulatory problems from prolonged standing positions (sales assistants, ironers, packers, etc);
- cervical spine diseases from prolonged unsuitable fixed positions;
- cold-related disorders in mass distribution;
- respiratory tract disorders among workers exposed to high degrees of heat and humidity, and fluctuating temperatures;
- allergies in the pharmaceutical industry and some industrial laundering jobs;
- high prevalence of musculoskeletal disorders – mainly back injuries – in the health care sector;
- over-medication with painkillers and antidepressants by call centre staff suffering constant headaches and eyestrain.

The finding encouraged the study promoters to take other actions in three areas:

1. **Social protection**, run by INCA: workers reporting potentially work-related disorders or diseases were asked to undergo specific diagnostic tests to set in motion the procedure for getting recognition of the occupational disease.
2. **Prevention**, run by the Preventive Health and Safety Department: awareness-building training was set up to give shop stewards the skills for conducting genderized negotiations with a view to getting gender differences factored into risk assessments and prevention activities. A big focus is put on working out demands for integrating ergonomic requirements into work organisation.
3. **Dissemination**, run by the union's national bodies: the full results of the action-oriented research will be published once the second phase is completed. The aim is to show the social, human and economic costs of disregarding the gender dimension in prevention. As well as trade union reps, we also aim to make the relevant official agencies aware of the need to pursue gender-sensitive policies on identifying occupational diseases, in particular in conjunction with general practitioners, and moving the issue up the scientific community and inspectorates' agendas with the aim of avoiding later-life injury and illness among women workers.

An end-of-scheme final evaluation will be done to determine any next steps. ■

* General Secretary of the Rome and Latium section of the Italian General Confederation of Labour (CGIL)

[1] INCA is an organisation with trade union affiliations whose main job is to help employed and pensioned workers in dealings with the social security system. See: www.inca.it.

[2] Italy's local public health units carry out health and safety inspectorate duties.

"Women, health, work": 4th World Congress in New Delhi

The 4th World Congress on "Women, health, work" was held in New Delhi in November 2005. It was the latest in a sequence begun in Barcelona (1996), and carried on in Rio de Janeiro (1999) and Stockholm (2002). The New Delhi Congress brought together over 700 mostly women participants from 61 countries: scientists from a range of occupational health fields, union activists, members of feminist groups and networks campaigning for health, the environment, social/employment laws and equality. Bringing together such a wide variety of experiences enabled shared concerns to be identified as well as new possibilities for working together on research and practical solidarity schemes.

In recent years, India has turned itself into a manufacturing powerhouse. But output growth has not closed the gaping social equality divides. Indian women still have to work a double day for what is usually a pittance. Modern forms of work-related oppression born out of globalization are compounded by longer-established forms related to the patriarchal family and caste system. Presentations by Indian delegates also revealed vigorous active opposition to all these forms of oppression.

The Congress attempted to work out a gender perspective on health at work. The mine of information it turned up cannot possibly be summed up in a few lines, but two things deserve particular mention:

- The need for women's work to be recognized is a problem in all countries. In the "visible" economic sphere, many skills and abilities possessed by women are discounted in order to justify low pay. The situation is worse still in the family economic sphere, where the bulk of unpaid work is done by women. Between the two lies a vast grey area of work in the informal sphere, in particular home work, where the exploitation of female labour is particularly brutal.
- The gender dimension can only be mainstreamed in health at work if women workers' voices are heard. The only way to reverse old-established male work-centred approaches to health at work is through participatory research tied to labour action.

The experience of the 4th Congress showed the importance of building up a world network on women's occupational health. European trade unions made a regrettably poor showing. And while having the proceedings conducted only in English was certainly an obstacle, a sizeable trade union contingent from Latin American countries and Quebec showed that it was not an insurmountable one. The next Congress is scheduled for 2008 in Mexico.

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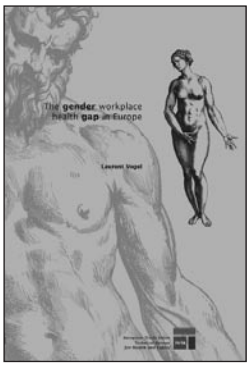
More information about the 4th World Congress: www.swl-delhi.org/wwh



The gender workplace health gap in Europe
Laurent Vogel

Also available in French, Italian and Spanish
2003, 15,5 x 24 cm, 344 pages

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Former asbestos cement workers search for justice

Aeternum, Eternal, Eternit. It was the enduring properties of asbestos that prompted Austrian Ludwig Hatschek to dub his recently-invented asbestos cement manufacturing process "Eternit" in 1901. The name would soon become a byword for a business success story before becoming indissociable over half a century later from the biggest health scandal in industrial history. Blinded by the qualities of the "magic fibre", asbestos cement manufacturers would ignore the build-up of scientific evidence to conceal the product's hazards from their workers. Hundreds of former asbestos workers are now sick. Many others have already died. Asbestos sufferers and deceased's families are trying to break down the wall of silence and standing up to demand justice.

Keep up with European and international developments on asbestos issues through our special report on the web: http://hesa.etui-rehs.org > Main topics > Asbestos.

Gaston Bequet (54), Franzi Blondeau (69), René Boltz (69), Giovani Bordignon (44)... on 13 July 2004, a regional daily in Wallonia, southern Belgium, gave its front page over to rows of small white crosses on a black background under the headline *102 names: the roll of agony*. The media bombshell rocked the village of Harmignies, where asbestos cement had been manufactured until 1987, and the Mons region (western Belgium) where the local community and councillors had little inkling of the tragedy. For Michel Verniers and Vivian Lescot, it was a matter of "job done", as the silence about asbestos victims was finally broken. The grisly toll now stands at 116 dead and 49 sick, out of the 250 people working for the Belgo-Swiss Eternit group subsidiary when it shut down.

Thousands of asbestos victims march in Paris on 15 October 2005 calling for asbestos to be "put on trial" for killing 3 000 people a year in France. © AFP

The two former workers and trade union reps became aware of the scale of the horror only in recent years when old workmate friends began dying of pleural mesothelioma or lung cancer. "I started writing the names of the Coverit dead in a notebook", recalls Michel Verniers, who soon after got in contact with ABEVA, the recently-founded Belgian asbestos victims support group.

Still an active trade unionist, the ex-worker had been harrying the Belgian Confederation of Christian trade unions (CSC) leadership – to good effect, as an asbestos action unit was not long after set up in one of the union's regional federations. The first meetings were held in 2004, to inform and try to create awareness among ex workers. Not the least paradox in the whole "asbestos affair" is that this union action started over 15 years after the factory closed.

France drives the agenda

Aware that the battle has to be waged worldwide, the ex Coverit workers soon began looking to strike up contacts with Eternit workers abroad. For several months now, Michel Verniers and his group of activists have regularly been crossing over the French border to meet up with former workers at Eternit France's Thiant and Prouvy factories, two neighbouring villages in the Valenciennes region (northern France)[1]. France, which seems to have a much greater awareness of the scale of the tragedy than Belgium, as the recent French Senate and National Assembly reports show[2], stands as a textbook model for Belgian anti-asbestos activists.

In 1995, the Valenciennes asbestos victims set about organising their response through CAPER, the

[1] According to ANDEVA, the asbestos victim support organization in France, 1 200 asbestos-related occupational diseases, including 200 deaths, have been recorded in the France Eternit group. Cf ANDEVA *Lettre d'information* (newsletter), October 2005.

[2] *Le drame de l'amiante en France: comprendre, mieux réparer, en tirer des leçons pour l'avenir,* French Senate report, 26 October 2005, 333 p. Downloadable from www.senat.fr/rap/r05-037-1/r05-037-1.html (in French only). *Rapport fait au nom de la mission d'information sur les risques et les conséquences de l'exposition à l'amiante,* French National Assembly report, 23 February 2006, 2 volumes. Downloadable from http://hesa.etui-rehs.org > News (in French only)

committee for asbestos prevention and compensation. The association, with a membership now standing at 725 (sufferers and deceased's families), decided to focus its activities on court action.

"We laid the first complaint for causing actual bodily harm in October 1996. We were pretty much going it alone at the time", reminisces association president René Delattre. At the same time as this bold move in the criminal courts, they also began suing for compensation through the civil courts. The association won its first big victory on 30 June 1999, when the Douai Court of Appeal found Eternit guilty of gross negligence (see box *Eternit in the courts*).

So far, CAPER has won over 500 cases! On the criminal side, four former directors and Eternit as a legal entity are under official investigation. In August, the case was transferred to the Paris District Court's "public health unit"[3].

Victim support groups view the consolidation of criminal complaints as a good thing, but query the lack of funding to conduct serious investigations. "If they are not driven forwards, asbestos prosecutions may not come to trial for ten years, by which time the culprits and victims will be dead", says René Delattre.

Eternit: "criminal behaviour", claim ex workers

Neither Belgian nor French workers are in any doubt: Eternit bosses acted like "pure criminals". Having known for years how harmful asbestos was, they took no serious steps to reduce their employees' exposure to the killer fibres.

"For decades, there was no protection. The asbestos came in bags, which were slit open by hand and workers poured the contents into a mill. The asbestos fibres went everywhere in the factory; the

Eternit in the courts

Italy: In 2003, the Turin public prosecutor's office brought a prosecution against Stephan and Thomas Schmidheiny, the former owners of Eternit in Switzerland, for manslaughter and criminal damage in relation to 2 000-odd cases of Italian workers who had worked on Eternit sites in Switzerland. The Turin investigations did not let the Belgian "wing" of the group off scot-free – the former chairman of Eternit Belgium's board of directors, baron Louis de Cartier de Marchienne, is also being prosecuted. On 27 May 2005, eight former Eternit managers were convicted by a court in Syracuse, Sicily. The co-accused were sentenced to 21 years in jail – three of them for manslaughter, and five for wilful neglect of safety at work measures.

Switzerland: In November 2005, a criminal complaint was laid by the German asbestos victims group for manslaughter against Stephan and Thomas Schmidheiny. A Turin examining magistrate was also recently authorized by the Swiss courts to consult the medical records of Italian workers who had worked at Eternit sites at Niederurnen, the company's principal place of business, and Payerne between 1950 and 1993.

France: In 1997, Eternit lost its first case for civil damages for gross negligence brought by a worker. Since then, the company has repeatedly been ordered by French courts to compensate its former workers or their families for gross negligence. Prosecutions have also been brought against former Eternit factory managers in France. Two judicial investigations for unintentional homicide by wounding were opened last December for the first time by a public prosecutor's office in Paris. One is against Eternit in Albi (Tarn). Previous judicial investigations on liability for asbestos-related occupational diseases had always been opened following a criminal complaint with a joined civil claim for damages, not a criminal complaint alone.

Belgium: In 1996, an Eternit worker affected by mesothelioma filed a complaint against his employer. He was non-suited, the claim being held admissible but unfounded. On appeal, the higher court upheld the decision, finding that while serious wrongful acts had indeed been committed, they were not "intentional". For the claim to succeed, the worker would have had to prove that the employer made him breathe asbestos in order to make him ill! In 1999, a mesothelioma sufferer living next to the Eternit Kapelle-op-den-bos factory also filed a complaint against the asbestos cement producer. The proceedings are still ongoing. Meanwhile, the victim has died, as has one of his sons, also from mesothelioma.

Netherlands: On 25 November 2005, Eternit was ordered to compensate the family of an environmental victim of asbestos, who died of mesothelioma in 2002 following exposure to asbestos in 1971 during the construction of a storage shed with Eternit products. The Dutch Court held that Eternit was already aware of the harmful effects of asbestos at that time.

Brazil: In August 2004, Eternit Brazil was ordered to compensate its workers suffering from asbestos-related diseases in legal proceedings brought by the São Paulo public law officer's department.

[3] Marseille District Court also has its own public health unit. The Paris unit has only three examining magistrates and seven deputies, whereas over a hundred victims filed complaints in the Jussieu asbestos case alone.

Eternit – "a family affair"

The way complaints in "the asbestos scandal" are handled in the criminal courts raises issues about the liability of the main asbestos industry firms who have always played down any links between them.

Where Eternit is concerned, it is a matter of record that the word originally referred to a patent, not a company name. But there is plentiful evidence of "family ties" between a select few of the asbestos cement industry "nobility" throughout the 20th century.

Two recent publications have shed light on these low-profile but undeniable links between the Emsens (Eternit Belgium), Cuvelier (Eternit France) and Schmidheiny (Eternit Switzerland) families.

In *Eternit et l'amiante. Aux sources du profit, une industrie du risque*[a], historian Odette Hardy-Hémery informs us that "the Eternit companies were linked from the very start by multiple interlocking holdings". The Belgian Emsens family, for example, was a founder investor in the joint stock company Eternit France on its incorporation in 1922. Seven years on, Eternit Belgium, Switzerland, Spain and Italy set up a joint subsidiary in Germany. Eternit France's board of directors decided that it "could not afford not to be involved in this international event", and took a 5% stake in the company's capital.

SAIAC – the association of asbestos cement industry companies – was set up the same year to exchange information on technology developments in the asbestos industry. But joint raw materials purchasing was a second strategic objective of the consortium. All Eternit companies across Europe, as well as the UK's Turner & Newall, were founder members.

The interplay of interests between the different Eternit companies was to carry on throughout the 20th century. The book *The tragedy of asbestos*[b] reprints the memberships of the board of directors of Compagnie Financière Eternit (Eternit Belgium) in 1966, 1976 and 1980, where the Schmidheiny brothers and members of the Cuvelier and Hatschek families sit alongside high-profile Emsens family names.

Despite the highly active management and production co-operation between the different Eternit firms, their former heads still staunchly deny having been aware of the dangers of the "wonder mineral". When some former representatives of the "asbestos cartel" have to explain themselves before the courts, that will be for justice to decide.

[a] O. Hardy-Hémery, *Eternit et l'amiante.1922-2000. Aux sources du profit, une industrie du risque*, Presses universitaires du Septentrion, 2005, 272 p.
[b] R.F. Ruers, N. Schouten, *The tragedy of asbestos. Eternit and the consequences of a hundred years of asbestos cement*, 2005, 122 p. Downloadable free in English from: http://international.sp.nl/publications/asbestos.pdf.

workers looked like snowmen", recalls Michel Verniers. "The asbestos shop was cleaned every week by workers, who would scrape off the asbestos residues then sluice them down with water", goes on the trade union activist, who started work at Coverit when he was just 14 years old.

"When I was taken on in 1977, I was trained at Kapelle-op-den bos[4]. Everything seemed to be fine, no problems at all, until the press picked up on the issue", fumes Vivian Lescot. The former Coverit employee does not see how Eternit could not have known. In fact, the first press reports stung the company to action, sending out a memo to workers, "Eternit sent round a memo telling its workers that chrysotile was a product that could only cause health problems if it was combined with smoking and other things", recalls Vivian Lescot.

In the early 1980s, the first preventive measures were brought in, like wet fiberizing, and automatic self-opening bags. But these half-hearted precautions did not go with any proper programme to inform and educate the workers. As a result, many went on slitting the asbestos bags by hand, as was still happening at Eternit's Thiant factory in 1995. A 1996 labour inspectorate report – the only one on the asbestos cement industry in France between 1975 and 1996! – singles out the glaring prevention failings in this particular factory[5].

Blaming the workers

Employers' failure to inform their employees meant that workers for too long viewed the danger of asbestos as theoretical. The epidemic of cancers has not yet broken out – there is a latency of 20 to 30 years before the first symptoms appear. And very few occupational doctors try to delve that deeply into the matter. Workers get an annual lung x-ray. Those with breathing difficulties are quizzed on their smoking and drinking habits. "You're smoking far too much!, the occupational doctor told us. Even those who had never touched a cigarette", Michel Verniers testifies. Alcohol was also singled out as a culprit, but never asbestos.

The fact is that doctors attached to the Eternit factories were ill-advised to go against the interests of the world leader in asbestos cement. René Delattre recalls the fate of one woman doctor: "In 1984, she took over from a company doctor who was employed by Eternit Thiant. She did thorough examinations which found

[4] Eternit's main factory in Belgium.
[5] Including: automatic debagging system not working properly (broken bags), materials moving system not leakproof (allowing major dust escape), poor servicing and supervision of dust extraction equipment, poor design and chronic under-maintenance of the machining unit. See: www.senat.fr/rap/o97-041/o97-0416.html.

Belgian inconsistency

On 17 March 2005, Belgium's Senate (upper house of parliament) passed a resolution urging the government to promote an international convention for a world ban on asbestos production and use*. In a press release, the resolution's author, the economic liberal senator Alain Destexhe, was quick to liken the Belgian anti-asbestos initiative to its vanguard role in getting anti-personnel mines banned and the International Criminal Court set up.

So keen is Belgium to spearhead the international fight against asbestos that Belgian lawmakers have had to leave some of their fellow-citizens damaged by asbestos to sink or swim alone. The problem is that only employees whose firms contribute to the Occupational Diseases Fund, the public agency that deals with compensation for work-related illnesses, get compensation. Many self-employed workers who have been exposed to asbestos (heating engineers, mechanics, electricians, etc.), and people contaminated by non-occupational exposure, are left out in the cold.

A series of private bills have been tabled in recent years to set up a compensation fund for these forsaken victims, similar to those that have been operating for some time in France and the Netherlands.

In June 2005, the National Labour Board (CNT), a joint employer-union body which gives opinions on employment issues for the government and parliament, found itself "currently unable to give an informed opinion on whether non-occupational asbestos victims should be compensated". Environmental victims will no doubt shed a tear for their plight…

A new, more solidly legally-based proposal promoted by an ecology party MP is being drafted and should be laid before parliament before long.

*The text of the resolution is available (in French) on: www.diplomatie.be/berlinfr/media/berlinfr/Initiative5.pdf

problems among 40 to 50 % of the workforce. Three years later, she was given the shove".

Sad to say, the trade unions did not ring many warning bells either. In France, apart from Force Ouvrière, the main trade unions sit on the notorious CPA – the standing committee on asbestos – described in the recent French Senate report as "an industry front"[6]. The economic context in particular is very harsh. The industrial bastions of northern France and southern Belgium are hard hit by industry shake-ups. Union priorities lie elsewhere. The main thing is saving jobs; health issues come second. But it is a wider threat, because asbestos risks do not stop at the factory gates.

What about environmental victims?

In the factory villages of Prouvy and Thiant, asbestos is everywhere. The paternalist tradition meant that Eternit could be open-handed, sharing around as widely as possible the "benefits of the magic fibre". This is why management let workers take away asbestos cement pipe length cut-offs which, once crushed, could be used to lay out attractive garden pathways. The jute bags in which the pure asbestos had been stored were re-used as potato sacks, or "recycled" into home handyman's aprons.

The village of Prouvy even boasts a workers' housing estate built entirely out of Eternit. Roofs and walls are 100% asbestos cement. A few hundred metres away stands a tipping site where production residues have been open-dumped since 1922. "After the Prefect's (departmental chief executive officer) intervention, the tip was landfilled at the end of the 1990s, because airborne asbestos dust was contaminating local residents' houses", recalls René Delattre.

It would be surprising if environmental victims did not crop up in the two Valenciennes villages. A local butcher who died of mesothelioma at the age of 25 is just one. In recent years, a growing number of people who have never worked in the asbestos industry have fallen ill. The wives of workers contaminated by washing their husbands' work clothes, people living in the factory vicinity, people working in asbestos-insulated buildings, etc. For these environmental victims, getting compensation is a full-time detective job to identify the source of the contamination which, in most cases, occurred dozens of years before the onset of the disease.

France has a compensation fund – the FIVA – from which environmental victims can claim compensation. Unfortunately, it is one of the few. But a European initiative is necessary, because the best-case estimates predict 250 000 asbestos-related deaths in Western Europe over the next thirty years[7]. ■

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[6] *Le drame de l'amiante en France, op.cit.*, p. 83.
[7] Agence Europe, 26 September 2005.

Rationalisation, yes. Deregulation, no

In January 2006, the ETUC gave its response to the Commission consultation on the rationalisation of national reports on health and safety. The ETUC supports rationalisation of reports if it delivers better monitoring of the practical implementation of Community health and safety at work provisions. But it cautions that rationalisation does not mean deregulation. The ETUC sees no good grounds for a programme of legislative simplification in the field of health at work. The union confederation's response spells out the conditions on which it would support a five-yearly general national report of the kind proposed by the Commission.

The ETUC argues that the report should be drawn up on the basis of a questionnaire updated each time, compiled by the Commission after consulting the Advisory Committee on Safety and Health. It would be completely illogical for an overall report to exclude particular areas on the excuse either that the initial directive did not expressly require a national report (e.g., the Carcinogens Directive), or that it was a non-binding Community instrument (recommendation) or mainly depended on social partner initiatives (European agreements).

It also stressed the need to address gender issues. It wants the report to indicate how far prevention policies cover both women and men equally effectively, and emphasizes the importance of the contribution of trade unions and employers' organisations which, it says, "should be safeguarded during all phases".

The full ETUC response is downloadable from: http://hesa.etui-rehs.org > News. ■

Armed forces not excluded from Community health and safety rules says ECJ

On 12 January 2006, the Court of Justice of the European Communities handed down a landmark judgement in infringement proceedings brought by the Commission against Spain.

The ruling was on the question of whether States can exclude public service activities – like the armed forces, police force or emergency services – from the scope of the Community health and safety at work directives. The 1989 framework directive is not applicable "where characteristics peculiar to certain specific public service activities, such as the armed forces or the police, or to certain specific activities in the civil protection services, inevitably conflict with it". It makes clear that "in that event, the safety and health of workers must be ensured as far as possible in the light of the objectives of this Directive". Some States interpreted this to mean that they could exclude some public service jobs (mostly, the armed forces, police and prison officers) from the scope of health and safety at work directives.

The Court of Justice points out that this exception is strictly limited to specific activities and does not permit entire categories of personnel to be excluded. Only exceptional events justified by the specific duties of certain public service personnel can oust the application of health and safety measures provided they are inherently inconsistent with the duties assigned to such personnel. So, for example, military personnel involved in an armed conflict could not invoke a right to withhold their labour on the grounds of a serious and imminent risk.

This ruling confirms ECJ precedent, laid down in a previous decision given on the same point in an Order of 14 July 2005, *Personalrat der Feuerwehr Hamburg* (Case C-52/04). ■

Reference: Judgement of 12 January 2006, *Commission v Spain* (Case C-132/04).

Europe leaves millions of workers at risk from sun's rays

The European Parliament and Council of Ministers reached agreement on November 15 to drop any reference to solar radiation from the proposal for a Directive on protection from optical radiation at the workplace.

ETUC General Secretary Johns Monks wrote to the European Commissioner taking issue with the decision. "By leaving it to Member States alone to define the obligations imposed on employers with regard to protecting workers, MEPs have placed themselves in conflict with EU policy, which aims since the Single European Act to harmonise rules on health and safety", he said. The text now completely excludes the harmful effects of solar radiation (cancers, eye and skin diseases), and refers only to eye damage from artificial radiation and lasers. ■

EP throws out port services liberalization

The European Parliament voted down the proposal for a Directive on the liberalization of port services by 532 for, 120 against and 25 abstentions on 18 January. "The result of this vote is a clear signal to European leaders that they have to take into account citizens' demands concerning their working conditions", responded the European Trade Union Confederation (ETUC).

Had the proposal for a Directive gone through it would have been "a major disaster" for health and safety at work claimed Philippe Alfonso of the European Transport Workers' Federation. "The self-handling provision would have let unscrupulous ship-owners have their ships unloaded by unskilled workers, many from Third World countries. Given the high cost of leaving a ship idle in a port, it can readily be imagined that they would have been forced to work at paces that were unsafe for them and other port workers". ■

REACH will help business save billions of euros

A new European Commission study reports that the draft REACH chemicals legislation could result in companies saving billions of euros on water treatment and other environmental costs like sewage sludge treatment.

Most studies on the draft REACH regulation have focused on the costs to the economy of imposing strict controls on chemicals manufacturers, including downstream chemicals users in other industrial sectors. But few have looked into the possible long term benefits of REACH through lightening the environmental load of chemicals, which are less easy to cost out.

The study published on 15 February 2006 set out to assess the benefits of REACH for the environment and humans exposed to environmental chemicals. It concludes that REACH will deliver savings of at least 150 to 500 million euros by 2017, when the 11 year rollout period ends. By 2041, the savings will amount to 8.9 billion euros, especially in such areas as "purification of drinking water, disposal of dredged sediment and incineration of sewage sludge instead of disposing it on farmlands".

These estimates are based on what the researchers consider the most reliable data and "well-documented case studies", as well as an assumption according to which "the potential benefit of REACH would be only at 10%" of total costs. ■

HESA Publications

Finding your way in the European Union Health and Safety Policy

A trade union guide

Lone Jacobsen, Viktor Kempa and Laurent Vogel

2006, 72 pages, 17 x 24 cm,
ISBN: 2-87452-011-X, 10

EU legislation and institutions form a complex network that can be hard to negotiate. Health and safety at work (HSW) is no exception. The HESA Department has just published a "who does what" guide to the field, which is more than just a tour of the players and processes that go into the making of European HSW policies. It also maps out avenues that unions can explore to get more of a say.

Depending on where their interests lie and what they already know about a given issue, readers can choose to explore the structure and organisation of the EU, ways in which trade unions can have an influence, or specific national examples.

The EU rules on health and safety at work derive from the EU Treaty and the directives that are drawn up on the basis of the Treaty. As well as these, there are technical standards, recommendations, guidance documents and communications, etc. The guide focuses on the most important ones. It also focuses on a few key aspects of the EU social dimension.

This guide is published in many other languages. To order the English and French versions: ghofmann@etui-rehs.org, http://hesa.etui-rehs.org

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New catalogue 2006

The HESA Department's 2006 publications catalogue is now out. It is free of charge, and can be ordered by email from ghofmann@etui-rehs.org.

The HESA Department has also recently published an updated version of the REACH brochure, and an impact assessment study done by the University of Sheffield (see p. 10).

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