1/2004

TUKES REVIEW

NEWS FROM THE SAFETY TECHNOLOGY AUTHORITY OF FINLAND

Estonia joined the European Union on 1 May 2004. Our colleague agency in the new member state is the Estonian Technical Inspectorate (TJI). Mr. Urmas Leitmäe is the Director General of the agency.

Cooperation within the EU to promote the technical safety in Estonia

The Estonian membership in the European Union brings new opportunities and big challenges to many branches. The technical safety also becomes more emphasised than before. Along with the improving general welfare, increased attention is paid to and more efforts are focused on the safety. Foreign capital investments will bring new know-how and affect the public opinion – a well-known fact is that safety is one of the self-evident operation prerequisites for international enterprises.

Being the market surveillance authority in one of the EU border states is quite a challenge for us, even if we have gained already some experience in surveillance practices. The market surveillance of electrical products was started in Estonia already ten years ago. The mandatory advance examination of products subject to our surveillance was abolished in 1999, and we have been satisfied with the change, although in some opinions there has been threat of the market running wild.

Adopting the general safety rules followed in Europe might cause extra costs to the companies having done business in Estonia only. On the other hand, once they have taken on the necessary changes, they will face wider business opportunities on the European-level market.

The co-operation with other EU member states increases the surveillance effectiveness, thus helping to spare the joint resources of the integrating Europe. The collaboration between the Finnish and Estonian surveillance authorities, which started back in early 1990s, has developed strongly – particularly since the foundation of TUKES. The recently completed EU-financed market surveillance development project was mainly occupied by Finnish experts, many of them working with TUKES. I wish to extend my sincere thanks to all those who contributed to the project. I am sure our collaboration will see years of further intensification along with Estonia's membership.

Urmas Leitmäe

Review of TUKES in 2003

Surveillance

Plants, installations and technical services

The safety of **chemical and liquid gas plants, explosives factories and warehouses, and mines** is at most sites quite good. However, the year under review saw two exceptionally serious accidents in process industry; a steel factory explosion that took the life of three, and a chemical leak in wood-processing industry causing severe environmental damage. The investigation of these accidents will include the consideration of means to prevent similar accidents.

The sites that carry on industrial handling and storage of dangerous goods are nowadays inspected at intervals of 1, 3 or 5 years depending on the amount of chemicals or explosives. The company procedures have improved lately – particularly at major sites which are obliged to submit a special safety report. Some businesses are doing so well that longer inspection intervals could be taken under consideration.

Natural gas transfer pipelines were not notably expanded in 2003. Additions and extensions were carried out on the present distribution network. The safety is on a good level, and no serious accidents occurred.

In the **pressure equipment** sector we investigated three accidents during the year and studied a few minor cases. On the grounds of accident notifications, functioning solutions should be developed for the backfire protection of small solid-fuelled heating centres. As a whole, the safety of pressure equipment is good.

Monitoring the observance of the legal periodic inspections, we used our Pressure Equipment Database, and paid visits to the sites where the inspections were neglected or the operation supervisor information was incomplete. The visits revealed shortcomings in the location and maintenance of equipment, and insufficiencies in the supervisors' technical and legal knowledge. Happily enough, no serious safety defects were found.

The safety of **electrical equipment** is affected by means of contracting and inspection surveillance, and carrying on equipment-specific supervision. Efforts of the on-field surveillance were again focused on installations that need an operation supervisor. Shortcomings in servicing and maintenance are still very common – one installation out of three showed this. The omitted periodic inspections of electrical installations to be registered with TUKES were investigated and put in order.

Electrical contractors provide reasonably good services. The initial inspections now take place quite regularly; only 10 % of the contractors had shortcomings. The occupational safety in electrical works still caused a remark to one contractor out of three, although much training has been available lately. Unauthorised contracting seems to be growing and expanding slightly, so a great deal of surveillance will be focused on that area also in the future.

The **safety of lifts** was monitored mainly by means of surveillance that concentrated in the technical services provided by the lift installation and maintenance companies and the inspection bodies. The occupational safety in the electrical works carried out in servicing of old lifts was under our special attention. The market surveillance procedures relating to new lifts were developed during the year. We also participated in the EU-level work in this sector.

Inspection bodies and businesses, stores selling portable fire-extinguishers, and fire alarm and fire extinguishing equipment businesses operated properly according to our surveillance observations, showing no notable deficiencies. Stores selling refrigeration equipment made more than 1,000 new statutory registrations with us by year-end.

Product surveillance

According to test results, the safety of **electrical products** has seen continuous improvement. Compared with last year, much less dangerous products were found on the market. TUKES made only 8 recall decisions, the lowest number in the last 9 years. We agreed with the Consumer Agency on starting the surveillance of miniature batteries and batteries in 2003. The few mobile phone replacement battery explosions that occurred at year-end led to the recall of some battery types from the market. At the same time we initiated the replacement battery testing project.

The sale of **fireworks** took place without notable problems. Only approved products were on sale. Improper use again caused several eye injuries. The **quarrying explosives** on the market had some shortcomings involving the use and storage, and the necessary warning instructions. Technically seen, we found no hazardous products in this sector.

Fireworks safety campaign poster

The surveillance sampling of **chemical tanks** revealed quite many deficiencies. The overall situation of tank manufacturing in Finland can only be marked fair. There were some minor marking defects, but remarks have been made concerning tank construction as well. Tanks with insufficient construction are not dangerous as such, but they involve a risk of environ-

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mental damage, because their reliable lifetime is shorter.

The **transport tanks and packages used for dangerous goods** are now officially approved by the VAK inspection bodies, transportable pressure vessels being accepted by notified bodies. The reorganised conformity assessment procedure has worked well. Thanks to the multi-stage surveillance practice, defective products seldom enter the market.

As for **gas equipment**, no deviations from the statutory requirements were found in our surveillance. Nevertheless, accidents in the use of equipment occur each year. **Aerosol dispensers** showed improved conformity with the relevant requirements, most of our remarks addressing the labelling. **Pressure equipment** on the Finnish market has been safe, but certain differences were still found as for the conformity. The cases with insufficient conformity with requirements varied from formal shortcomings to potential in-service risk factors. Most deficiencies were found in markings of safety devices and pressurised accessories, in documents, and in various procedures provided by law.

As to **rescue service equipment**, we found some shortcomings in all product categories – mostly in markings, written instructions, and product-specific characteristics.

Non-conforming **CE-marked construction products** were not found on the market.

Of **measuring instruments**, shop scales and fuel meters account for the highest material flow. The average situation of fuel meters has remained satisfactory. Unverified scales or even scales not suitable for verification at all are mostly used in non-food stores and bakeries. Many restaurants still use illegal alcohol dispensers or serve beer or cider measured with unverified instruments. Some interpretation disputes regarding measurements with lubrication oil meters were taken up with the Provincial Governments and the Consumer Agency.

The number of remarks given to enterprises dealing in **articles of precious metals** increased from the previous year, being at 60 % of the businesses visited (35 % in 2002). The surveillance was increasingly targeted at outlets that differ from the traditional jewellery line, and at newcomers in the field. Sadly enough, there are products with insufficient markings or without any markings whatsoever on the Finnish market. Imported products often lack the officially registered responsibility mark. Furthermore, we revealed a few products made of non-precious metals that were sold as articles of precious metals.

Table 1. Accidents reported to TUKES in 1990-2003.

Accident category	1999	2000	2001	2002	2003
Dangerous chemicals, sites monitored by TUKES	30	35	32	35	41
Dangerous chemicals, other sites	27	31	114*	120*	102*
Mines[1]	63	85	59	46	45
Other accidents in mines	-	2	1	2	2
Electrical equipment and installations	42	49	44	52	49
Fireworks, home-made bombs[2]	15	62	34[2]	44[2]	38[2]
Pressure equipment	16	12	15	19	24
Elevators	9	9	10	4	3
LPG	16	9	6	13	12
Aerosol dispensers	9	1	-	-	2
Explosives	5	4	3	4	3
Natural gas	-	-	-	-	1
Transport of dangerous goods[3]	4	2	9	5	9
Total	**236**	**301**	**327**	**344**	**331**

*) The numbers are attributable to the more effective utilisation of the PRONTO rescue service resource and accident reporting system.

1) lost-time accidents (resulting in at least one lost work shift)
2) incl. fires caused by fireworks with estimated damage of over 2,000 €
3) incl. road accidents with a chemical leak to soil of over 1,000 litres

Accidents in 2003

TUKES set up a total of 10 investigator groups for serious accidents in 2003. Among these cases were:

- explosion at a steel factory causing the death of three
- accident with LPG heater, in which two died of carbon monoxide
- LPG blast in a one-family house
- two fatal electrical accidents
- personal accident at a mine leaving one dead
- elevator accident, in which one person was squeezed to death between the machinery and wall
- occupational accident leaving one seriously injured of hot fuel oil splashes
- LPG explosion at an asphalt mixing plant leaving one seriously injured
- occupational accident, in which an object throwing out from pressure equipment caused one person serious injuries

The accidents cost totally the life of 11 (9 in 2002). There were a total of four fatal electrical accidents. In three of them, the victim went too close to an open live overhead powerline, the fourth accident being caused by an incorrectly made electrical installation at a caravan. One of the fatal accidents was suffered by an electrical professional, which has been very rare in the last few years.

Two exceptionally serious accidents occurred in process industry; a steel factory explosion that took the life of three, and a chemical leak in wood-processing industry causing notable environmental damage.

Research and development

Several R & D projects aiming at development of the safety culture and safe practices were initiated and completed during the year. Among them are the following:

- Doctoral dissertation “The functionality of safety management systems: Strengths and areas for improvement at establishments involving major-accident hazards”.
- Research on safe handling of chlorine dioxide, in collaboration with businesses in the field.
- Risk assessment of soda recovery boilers.
- Requirements and function of carbon monoxide detectors.
- Nickel contents of white-cold products in collaboration with the Consumer Agency.

Among the new projects launched in 2003 were the following:

- Safety indicator project together with the Ministry of Trade and Industry (2003–2005) to create an indicator system for technical safety for assessment and measurement of operation impact
- Investigation of electrical accidents suffered by professionals, jointly financed by the Tampere University of Technical (2003–2006) to find out accident causes and methods of prevention.

- Follow-up investigation of ignition causes and frequency of electrical fires (2003-2005) as continuation of the study carried out in 1998–1999.
- Development of environmental risk control (2003–2005), in cooperation with the Ministry of the Environment and the Finnish Environmental Institute, for definition of environmental analysis criteria and general terminology of environmental risks.
- Diploma thesis on observation of overhead powerlines from work machines (2003–2004).
- Functioning of smoke exhaust equipment in fires and reasons for operation failures (2003–2004).
- Local authority control project to develop procedures for the necessary support and harmonisation of rescue service operations in the surveillance of chemicals.

TUKES worked actively in several safety-promoting law preparation projects, committees and collaboration networks both on the national and international level. A special PHARE project aiming at developing the market surveillance in Estonia was run during the year. The project was managed by a Finnish consortium participated by TUKES' experts who worked in Estonia e.g. in the fields of electrical safety, gas appliances, and legal metrology.

Information and communication

TUKES runs active information and communication within its field of operations, targeting both entrepreneurs and private citizens through a wide variety of channels: campaigns, web communication, fairs, expert lectures and articles, and media releases.

The most visible of all was an extensive fireworks safety campaign, mainly activated as TV information spots. The campaign succeeded well; it achieved high observance values and the message reached the target groups excellently. Compared with other non-profit information campaigns, we also achieved very good cost-effectiveness.

Among other extensive communication packages were the following:

- Campaign for the safe use of LPG
- Stove safety campaign (Nordic joint-venture)
- ATEX information campaign (potentially explosive atmospheres)
- TUKES Guidebooks: Safe handling of oxygen, Lightning protection of explosive storages, Pressure equipment, Chemical pipelines, ATEX – Safety of potentially explosive atmospheres, Fireworks
- Real-estate electrical safety guide
- Home electrical safety guide and the related webpages.

New e-government services opened at our website during the year: the VAROweb (Accident and Damage Database), exam registration service, and notification service for observations of hazardous electrical products. The web-based electronic information mailing system had more than 1,500 subscribers at year-end (1,140 in 2002). We were contacted nearly 1,700 times from our website (887 in 2002). The Extranet system, operated jointly by TUKES, the Provincial Governments and the inspection bodies, was introduced for the follow-up of the measuring instrument verification demands, the statistical information on surveillance observations, and for dissemination of information to the interest groups.

Payroll strength

Our payroll strength in 2003 was 116 person-years. The year-end staff numbered 125.

Person-years by Group in 2003 (2002)

Group	
Plant and Installations Surveillance	46 (46)
Product Safety Enforcement	37 (32)
R&D and Support Services	33 (33)
Total	**116 (111)**

Staff by education in 2003

Doctor, licentiate	7
Graduated engineer	32
Other university degree	16
Polytechnic	4
Engineer	21
Other college or intermediate	36
Comprehensive school	9

Training days in 2003
Average: 11 days/person

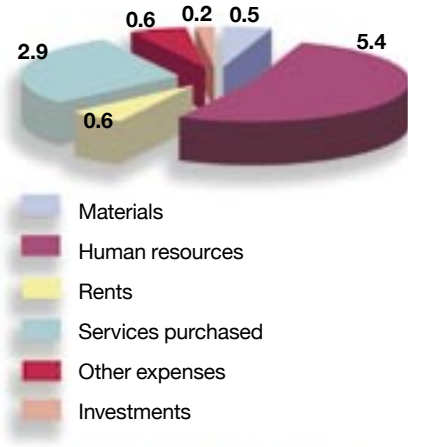
Vocational training[1)]	642
Language training	417
ITC	98
Information	49
Quality	84
Other training	114
Yhteensä	**1,404**

1) incl. training in safety-related technology, administration and normative procedures, and management

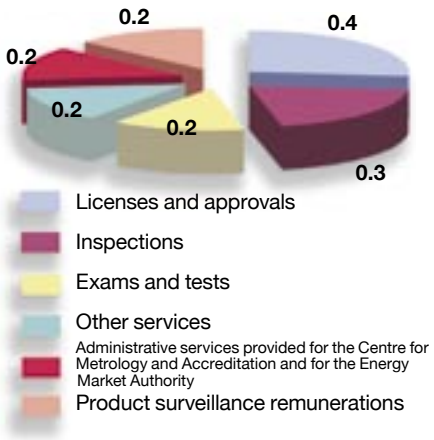
Finance

The total costs of TUKES' operations amounted to EUR 10.2 million. Income from services sold and other income totalled EUR 1.4 million.

Expenses by type in 2003 (Total EUR 10.2 million)



Income and remunerations in 2003 (Total EUR 1.4 million)



Implementation of the Lift Directive in Finland evaluated

Assessor Graham White (left) at on-site visit with Tapio Härö of Schindler Oy, Finland

In early 2004 the success of the implementation of the Lift Directive in Finland was evaluated by the EU Commission. The assessor sent by the Commission was given a comprehensive and uniform picture of the implementation, the consequences and possible correction needs of the Directive, and of the market surveillance in Finland.

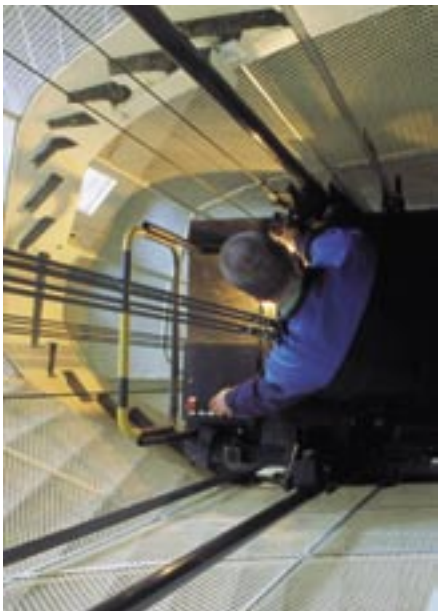
The Commission has compiled response from the implementation also from Germany, England, Italy, Spain, Portugal and Belgium. The evaluation is carried out by The European Evaluation Consortium (TEEC), a specialised group of four companies. In Finland the evaluation took place on 7–9 January 2004 by Mr. Graham White of The Evaluation Partnership Limited, England. The first two days included interviews with the representatives of the major actors. On the third day Mr. White visited a total of seven different new lifts on-site, and monitored the actual procedures of how the products are placed on the market.

Mr. White was joined by experts from the Ministry of Trade and Industry, Finland, TUKES, lift installation and maintenance companies, orderers, technology industry and inspection bodies.

The Directive both praised and criticised by Finns

The lift market in Finland is small in international comparison, and the world's most-sold lifts account for a high share of all lifts in our country. Almost without exception these lift concepts have been granted type-approval by a European notified body. Although the lift market in Finland is small, peaceful and risk-avoiding, differences can be found in these highly tried products.

The EU Lift Directive, implemented in Finland in 1999, has improved the safety of our lifts e.g. as to the car door and emergency phone – improvements that are generated by the EN 81 family of standards as well.



Nevertheless, the evaluation sessions also revealed a number of shortcomings in the Directive. Almost all of those concerned complained of the requirements for placing products on the market for being complicated and in some parts even incorrect. Most criticism was levelled at the provisions on the construction of a lift in an existing building and the refuge space needed. Today it is generally understood that the modern technology allows to construct lifts in existing buildings with substitute refuge spaces without endangering the safety.

The evaluation results are available in spring 2004. However, compiling a comprehensive summary from all the seven countries – not to speak about presenting summary-based recommendations – is nothing but easy; so much do the countries differ from each other.

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The Seveso II Directive to change the storage of chemicals and explosives

The Seveso II Directive was given in 1999 to improve the safety in chemicals industry. The directive has now been amended and specified on the basis of the increased knowledge of the environmental impact of chemicals and the recent industrial accidents. Among such serious accidents are the Enschede fireworks storage explosion in the Netherlands and the ammonium nitrate blast in Toulouse, France.

Along with the amended regulations being brought into force by national legislation in June 2005 at the latest, some entrepreneurs will be subjected to increased obligations. The major changes apply to businesses that handle and storage oil products, ammonium nitrate, explosives, some carcinogenic substances, and environmentally dangerous chemicals.

The most important of the changes is the obligation to draw up a major-accident prevention policy document or a safety report on the storage of the following substances in case the amounts exceed the new minimum limits, e.g.

- ammonium nitrate and products containing it; potassium nitrate
- dimethyl sulphate and hydrazine
- oil products, e.g. gas, petroleum and gasoil (excl. heavy fuel oil)
- explosives of categories 1.1–1.3, 1.5 and 1.6

– environmentally dangerous substances under risk phrase R50, R50/53 or R51/53

The new directive also emphasises the importance of collaboration between the companies and subcontractors and that of hearing the public in connection with establishing and updating the emergency plans.

The new major-accident prevention policy documents and safety reports shall be prepared and submitted not later than within one year after the time the national statutes have become effective, i.e. in June 2006.

The issue will be addressed in more detail on our website.

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Improved safety for electrical products

In the market surveillance attended to by the Safety Technology Authority (TUKES), the safety of electrical products in Finland has improved from the previous years. The number of products with serious shortcomings was this year notably lower than before. The manufacturers and importers now take better care of making sure that the products are in conformity with the relevant requirements. The market surveillance collaboration between the European-level authorities has also intensified in the past few years. All this has resulted in fewer dangerous electrical products on the Finnish market.

In 2003, our electrical products inspectors made more than 2,700 surveillance visits to retailers, domestic manufacturers and importers. Over 700 products were suspected to be in violation with the requirements, and they were forwarded to more detailed examination and testing. Of them, nearly two thirds passed the test without problems or showed just minor faults. There are tens of thousands electrical product types on our market, so in general they fulfil the requirements very well.

Most safety defects were found in lighting fittings, particularly in decorative luminaires, and in cable reels and IT hardware power sources. Furthermore, the number of exploded mains-connected 230 V halogen light bulbs has increased alarmingly.

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Finnish responsibility marks on the Internet

An English version of the Register of Finnish Responsibility Marks will be published on the Internet site of the Safety Technology Authority (TUKES) this summer. As well as consumers, the register will also serve the foreign entrepreneurs and students in the field of articles of precious metals.

This electronic service, rather scarce on an international scale, will be found on the English language site of TUKES www.tukes.fi/englanti/index_englanti.html.

The registration of responsibility marks is a service that protects them. Registration is also a tool of the surveillance of articles of precious metals. A responsibility mark unambiguously identifies the manufacturer or importer responsible for the article. A responsibility mark consists of a single or several capital letters. Prior to 2001 combinations of lower and upper case letters as well as symbols were also accepted.

In Finland responsibility marks have been used as maker's marks on articles of precious metals since the 15th century. The oldest piece of information in the official TUKES register is from 1921. In the Finnish register there are also dozens of foreign responsibility marks.

If one knows the responsibility mark, it is simple to identify the responsible organisation through using the register. The reverse way is also possible: you can find all the marks employed by a specific company or craftsman. All responsibility marks consisting of a symbol have identification numbers. You can search through data for the whole Finland or limit the search only to one municipality. The register also indicates whether the responsibility mark is still in use and if it has been confirmed. By using the feedback option you can send TUKES comments and ideas with regard to the register.

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Measuring Instrument Directive approved

At long last after 13 years of preparation and difficult negotiations the EU Council of Ministers approved the Measuring Instrument Directive on 26 February 2004. It applies to equipment subject to requirements laid down by law, generally used for trade and authority functions. Examples of them are fuel meters, water meters, taximeters and exhaust gas analysers.

National adoption foreseen to start in early 2007

The directive is due to be published in the Official Journal of the European Union in summer 2004, becoming effective 20 days thereafter. The member states shall begin to apply the new regulations within 2½ years from the publishing, i.e. approximately on 1 January 2007. Nevertheless, instruments that meet the requirements which were valid before that date may still be placed on the market and taken into use ten years after.

In Finland the responsibility for the necessary law preparation lies with the Ministry of Trade and Industry assisted by TUKES. We also participate the EU authority collaboration preparing instructions to harmonise the interpretation of requirements.

Measuring instruments being subjected to legal requirements are one of the latest product groups for which the Common Market is not yet ready. Some instruments must still fulfil certain detailed older directives, but there has been no general agreement in updating the directives to meet today's requirements for electronic measuring instruments. Consequently, the instruments are mainly regulated by non-harmonised national statutes, usually meaning separate type-approvals in each member state. Happily enough, a partial mutual acceptance of test results has yet been successfully established.

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New regulations apply to CE-marked construction products

A new Act and Decree on approval of construction products came into force in early 2004. The new statutes given by the Ministry of the Environment define the grounds for the CE marking, type-approval and other product approval procedure, and lay down the alternatives to show the suitability of the products. Along with the adoption of the new regulations, part A3 of the Building Code of Finland was repealed.

The Decree prescribes the CE marking of products and the adjacent information to be given in accordance with the EU Construction Product Directive. The Decree also covers the European technical approval procedure and the responsibilities relating to the CE-marking. The acceptance of certification bodies, inspection bodies and testing laboratories as independent bodies is also within the scope of the Decree.

Furthermore, the Ministry of the Environment has added a new article 5.2 to part B2 of the Building Code (load-bearing structures), which defines how the conformity of the CE-marked stone aggregates shall be shown in Finland.

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