

The impact of directive 2006/42/CE on the safety of agricultural and forestry machinery

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From 29th December 2009, the Directive 2006/42/EC, the new Machinery Directive, is to be applied and it will replace the actual Machinery Directive 98/37/EC. Several are the differences between these two directives and many aspects are related to agricultural and forestry machinery. In particular this contribution focuses on three main novelties:

1. the inclusion in the scope of agricultural and forestry tractors for the risks not covered by Directive 2003/37/EC;
2. the article 9, which defines specific measures to deal with potentially hazardous machinery, with reference to agricultural machinery;
3. directive of the European Parliament and of the Council on machinery for pesticide application, amending Directive 2006/42/EC.

For what concerns agricultural and forestry tractors, one of the relevant risks not covered by the Directive 2003/37/EC refers to travel movements. In particular travel movements of tractor must be possible only if the driver is at the controls. Nowadays, most of the agricultural and forestry tractors manufactured do not comply with this safety requirement. Moreover, agricultural and forestry tractors with a mass lower than 600 kg are not fitted with a roll over protective structure (ROPS) even if the roll over risk is relevant and the Directive 2003/37/EC specifies the necessity of seat-belt attachment points. According to Directive 2006/42/EC *“where, in the case of self-propelled machinery with a ride-on driver, operator(s) or other person(s), there is a risk of rolling or tipping over, the machinery must be fitted with an appropriate protective structure, unless this increases the risk”*. Technically it is possible to fit a ROPS without increasing the roll over risk also for tractors having a mass equal to or greater than 400 kg. Furthermore, the foldable ROPS, applied on several narrow track and track-laying tractors, does not comply with one of the principles of safety integration which establishes that *“when designing and constructing machinery and when drafting the instructions, the manufacturer or his authorised representative must envisage not only the intended use of the machinery but also any reasonably foreseeable misuse thereof”*. In fact, the use of tractor with the foldable ROPS not in safety position during some working operations is a foreseeable misuse.

Finally, the hydraulic couplings, generally used on tractor for the movements of the attached operator machine, do not comply with the safety requirements defined at point 1.2.2 of the new machinery directive *“control devices must be designed in such a way that the movement of the control device is consistent with its effect”*. In fact, considering that there are no identifications on the hydraulic outlet and the related hydraulic inlet on the operator machine, changing the hydraulic coupling should lead to have no more consistency between the control device movement and its effect. Related to these aspects the Italian National Institute for Occupational Safety and Prevention (ISPESL) registered 114 fatal accidents due to roll-over during 2008 and 77 (71 due to roll-over, 2 due to travel movements, 3 due to falls from the driving position and 1 due to unintentional movement starting the engine from the ground) fatal accidents during the first six months of 2009.

Concerning the content of article 9, it refers to potentially hazardous machinery and defines specific procedures to deal with them. In particular, a first procedure may be used whenever a product can be deemed hazardous on the basis of a defective standard, a second procedure can be invoked against a machine or an entire group of machines whenever they present the same risk of a machine whose free movement has been

restricted according with the procedures of the safeguard clause. Related to this, ISPEL during its market surveillance activity reported several non-compliances common to entire group of machines:

- agricultural self-propelled machines. They present roll-over risk without fitting a ROPS and travel movements without the driver at controls. ISPEL is involved into a CEN new working item for the definition of a standard on the protection against roll-over and tip over for this kind of machines;
- rear excavators. The relative motion between tractor and rear excavator is not allowed by means of safety devices not integrated with the machine itself. Thus the application of these devices depends on the operator. Several fatal accidents in Italy are recorded related to this aspect. ISPEL is involved in the development of a specific EN standard for this kind of machines.
- highway maintenance machines. These kind of machines are attached to or mounted on carrier vehicles (e.g. trucks, tractors, construction machines, industrial trucks). ISPEL verified that the related standard, EN 13524:2003, with reference to the protection against parts being ejected was defective. Thus ISPEL asked CEN to amend this standard for what concerns the protection against parts being ejected;
- rotary mowers and flail-mowers. This kind of machines are often used with the rear part opened for particular field operations. The related standard, EN 745, specifies how to perform the throwing object test without referring to particular working configurations. Hence, the throwing object test has to be passed in all the possible working configurations even with the rear part opened. Nowadays several of these machines do not fulfil the test while the rear part is opened.
- telehandlers (self-propelled variable reach trucks). The related standard EN 1459 taking into account the hazard related to travel movements without the operator at controls, specifies that it is sufficient to use the parking brake and the gear in neutral. As a consequence the fulfilment of the safety requirement depends on the operator, despite of the presence of technical solution already used on other kinds of machines technically similar. Thus ISPEL, considering that fatal accidents due to this lack have been occurred in Italy, asked CEN to amend the standard concerning this safety requirement.

With respect to pesticide application, the European Commission has adopted the Thematic Strategy and proposed a directive of the European Parliament and of the Council establishing a framework for Community action to deal with the main legislative aspects of its implementation. The Thematic Strategy sets out five main objectives:

1. to minimise risks to health and the environment from the use of pesticides;
2. to improve controls on the use and distribution of pesticides;
3. to substitute the most dangerous pesticides with safer alternatives;
4. to encourage low-input or pesticide-free cultivation;
5. to establish a transparent system for reporting and monitoring progress.

With reference to the first point, the Directive 2006/42/EC has been amended introducing the definition of “*essential health and safety requirements*” as mandatory provisions relating to the design and construction of the products subject to the Directive to ensure a high level of protection of the health and safety of persons and, where appropriate, of domestic animals and property and, where applicable, of the environment. In particular essential health and safety requirements for the protection of the environment, and the related market surveillance, are applicable only to machinery for pesticide application. Moreover a section 2.4 “Machinery for Pesticide Application” has been added to the Directive 2006/42/EC Annex I which specifies the essential health and safety requirements for this kind of machinery related to:

- controls and monitoring of the pesticide application;
- filling and emptying, preventing spillage of pesticide and avoiding the contamination of the water source;
- application rate, fitting the machinery with means of adjusting the application rate easily, accurately and reliably;
- distribution, deposition and drift of pesticide in order to minimise losses to no target areas and to prevent drift of pesticide to the environment;
- losses during stoppage shall be prevented;
- cleaning without contaminating the environment;
- servicing without contaminating the environment;
- facilitating inspections ;
- marking of nozzles, strainers and filters;
- indication of pesticide in use;
- instructions.

Considering that each year 150.000 ÷ 250.000 new machinery for pesticide application are put in the market, these new requirements for the protection of the environment should lead to a reduction both to the contamination of the environment and to the pesticide consumption.