European harmonised standards on plant protection equipment

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Content

• Regulations on pant protection equipment: recall of the context

• Implementation of European Directives on plant protection equipment

• European harmonised standards under development
Regulations on plant protection equipment: recall of the context
Regulations on plant protection equipment

• Road travelling rules
  ➢ National regulations

• Safety
  ➢ Machinery Directive
    - since 1995
    - new MD since January 2010
      Directive 2006/42/CE in replacement of 98/37/CE

• Environment
  ➢ National regulations
  ➢ European regulations
    Thematic strategy on sustainable use of pesticides
• **Regulation replacing Directive 91/414/EEC**
  - Placing of chemicals on the market

• **Framework Directive on sustainable use of pesticides**
  - Includes the inspection of plant protection equipment in use
    - All types of PPE but knapsack sprayers can be excluded (MS decision)
    - PPE for professional use only

• **Amendment to the Machinery Directive**
  - Plant protection equipment – new machines
    - All types of PPE except sprayers without a pressure chamber
    - For professional or non professional use
Implementation of European Directives on plant protection equipment
The new approach

- **European Directives « old approach »**
  - They set:
    - objectives
    - solutions
    - methods of verification

- **Directives « new approach »**
  - They set only objectives called « **essential requirements** »
  - Reference can be made to **European harmonised standards**
EN standards

- Developed by the CEN
- The CEN is organised in Technical committees (TC’s) and working groups (WG’s)
- CEN TC 144 is the technical committee for tractors and agricultural machinery
- Within TC 144, WG3 (mobiles machines) is in charge of plant protection equipment
- Members of the WG’s are national voluntary experts from the industry (manufacturers, labs, technical institutes, authorities etc) nominated by their National Standardisation Body (AENOR, Afnor, BSI, DIN…)
- The work is coordinated by a convenor with the support of a project leader (technical aspects) and a secretary (administrative aspects)
EN harmonised standards

- Developed by the CEN to support a European Directive
- Published in the Official Journal of the UE
- The conformity to an harmonised standard gives presumption of conformity to the corresponding Directive
  - Directive $\rightarrow$ essential requirements
  - Harmonised standard $\rightarrow$ functional or technical requirements
- A table is included in the standard that gives the correspondence between the essential requirements and the standard requirements
- For each requirement, the standard shall specify the method of verification: visual inspection, functional test, measurement
Example: cleaning

- **Amendement to the Machinery Directive**
  Essential requirement
  2.4.6.1. Cleaning.
  « The machinery must be designed and constructed to allow its easy and thorough cleaning without contamination of the environment »

- **EN ISO 16 119 standard**
  Technical requirements
  - roughness of internal walls of the main tank
  - Rinsing tank
  - residual volume
  - Device for the internal rinsing of the main tank
  - Dilution of the residual volume
  - Instruction manual
The standardisation process

- **Mandate from the Commission to the CEN**
- **Standardisation work**
  - 3 years time frame
  - The draft developed by the WG has to pass 3 main successive enquiries (vote of the Member States)
    - 1rst step = Committee Draft (enquiry within TC 144)
    - 2nd step = Public enquiry
    - 3rd step = Final draft (enquiry within TC 144)
  - A consultant is nominated by the CEN to follow the work of the WG and make sure the standard complies with the directive
- **Publication**
  - becomes official when published in the JO UE
  - implementation by 1 MS needed before publication in the JO UE
ISO standards

- International scale standards
- TC23: Technical committee « Tractors and machinery for agriculture and forestry »
- SC6: Sub committee within TC23 « Equipment for crop protection)
- 30 countries are member of SC6
- 36 existing standards + 7 under development
- Test methods, classification scales, coding, performance criteria and limits…
- Machines, systems or components
- Focus on environmental issues since 15 years
- EN standards refer very often to ISO standards
- More and more standards are developed in common between CEN and ISO (EN ISO standards)
- Similar development process as for EN standards
ISO standards

New sprayers
► Environmental requirements

Sprayers in use
► Inspection

Distribution
► Test methods and spray deposits measurements

Test methods
► Test methods for hydraulic sprayers and volume/ha adjustment systems

Cleaning
► Test methods for internal and external cleaning
► Drainable volume measurement

Induction hoppers
► Test methods and performance limits

Boom
► Steadiness

Drift
► Measurements and classification of sprayers

Nozzles
► Coding, test methods and droplet size measurements
Harmonised standards under development on plant protection equipment
Harmonised standards on PPE

• Safety
  - Machinery Directive
    since 1995, new MD since January 2010
    Directive 2006/42 in replacement of 98/37
    → EN ISO 4254-1 General requirements
    → EN ISO 4254-6 Specific requirements on sprayers

• Environment – inspection of equipment in use
  - Directive 2009/128
    FWD on sustainable use of pesticides
    → EN ISO 16 122 under development

• Environment – new equipment
  - Directive 2009/127 (amendment to the MD 2006/42)
    → EN ISO 16 119 under development
EN ISO 16 119 series

• **Scope**
  Environmental requirements for sprayers
  Design and performance requirements
  NB: sprayers = application of pesticides under liquid form

• **Parts under development**
  - Part I: General
    general requirements + marking + instruction manual
  - Part II: Horizontal boom sprayers
  - Part III: Sprayers for bush and trees
  - Part IV: Fixed and semi mobile sprayers

• **Knapsack sprayers**
  Not covered by ISO 16 119 but existing ISO 19932 series under revision within ISO TC23/SC6)

• **Future possible additional parts**
  Train sprayers, aerial sprayers, foggers
• **Part II: horizontal boom sprayers**
  
  Introduction
  
  1. Scope
  2. Normative references
  3. Terms and definitions
  4. List of significant hazards
  5. Requirements
  6. Verification
  7. Marking
  8. Instruction handbook
  
  Annex ZA
  
  Bibliography
Part II: Horizontal boom sprayers

Requirements
Based on EN 12 761-2

- **Tank**: surface, filling hole, content indicator, residual volume, drainage, agitation …
- **Hoses and pipes**: bending radius, max pressure, quick acting valves
- **Boom**: sections, adjustment, contact with obstacles
- **Filters**: size, position, access, maintenance
- **Nozzles**: adjustment, dripping, protection, flow rate
- **Measuring systems**: readability, accuracy
- **Regulation**: constancy, accuracy
- **Distribution**: evenness
- **Spray drift**: limitation
- **Cleaning**: rinsing tank, tank cleaning, residual volume dilution
• **Status**
  - **Part I to III:**
    Public enquiry passed
    Final draft approved by TC 144
    Formal vote in course
    Publication probably in 2012
  - **Part IV:**
    Preliminary draft under development
EN ISO 16 122 series

• **Scope**
  Requirements and test methods for the inspection of sprayers in use

• **Parts under development**
  - Part I: General
  - Part II: Horizontal boom sprayers
  - Part III: Sprayers for bush and trees
  - Part IV: Fixed and semi mobile sprayers

• **Knapsack sprayers**
  Not covered by ISO 16 122 but could be included in the ISO 19932 series

• **Future possible additional parts**
  Train sprayers, aerial sprayers, foggers
• Part II: horizontal boom sprayers

Introduction
1. Scope
2. Normative references
3. Terms and definitions
4. Requirements and methods of verification
5. Test report
   - Annex A (Summary of the inspection)
   - Annex ZA
   - Bibliography
Part II Horizontal boom sprayers

Requirements and method of verification
Based on EN 13 790-1

- **Pump**: flow rate, leakages, pulsations, air chamber
- **Tank**: lids, filling hole, induction hopper, pressure compensation, level indicator, drainage, filling, cleaning
- **Measuring systems**: readability, accuracy
- **Hoses and pipes**: wear, bending, leakages
- **Filters**: presence, size, isolating device, changeability
- **Boom**: stability, alignment, automatic resetting, nozzle spacing, nozzle position, height adjustment, suspension, pressure variations...
- **Nozzles**: similarity, dripping
- **Distribution**
• **Requirements**
  - **Part II and part III:**
    
    Test methods
    - Pump capacity with pump mounted on the sprayer
    - Verification of the sprayer pressure indicator
    - Flowmeter for controlling the volume/ha rate
    - Measurement of the transverse distribution by a patternator
    - Measurement of the flow rate
    - Measurement of the pressure drop
    - Measurement of the pressure variations when the sections are closed
• **Status**
  - **Part I to III**:
    Public enquiry passed but a lot of changes after the review of comments by WG3
    → need for a second public enquiry
    → project to be re-started because getting out of the initial time frame
  - **Part IV**:
    Preliminary draft under development
Conclusion

• Environmental requirements on sprayers are more and more demanding
• The FWD and the amendement to the MD set up new rules in the EU
• Harmonised standards are essential because they facilitate the implementation of European Directives and contribute to harmonisation within Europe
• But the resources and the time available for developing standards are limited
• Priorities have to be made
Thank you for your attention