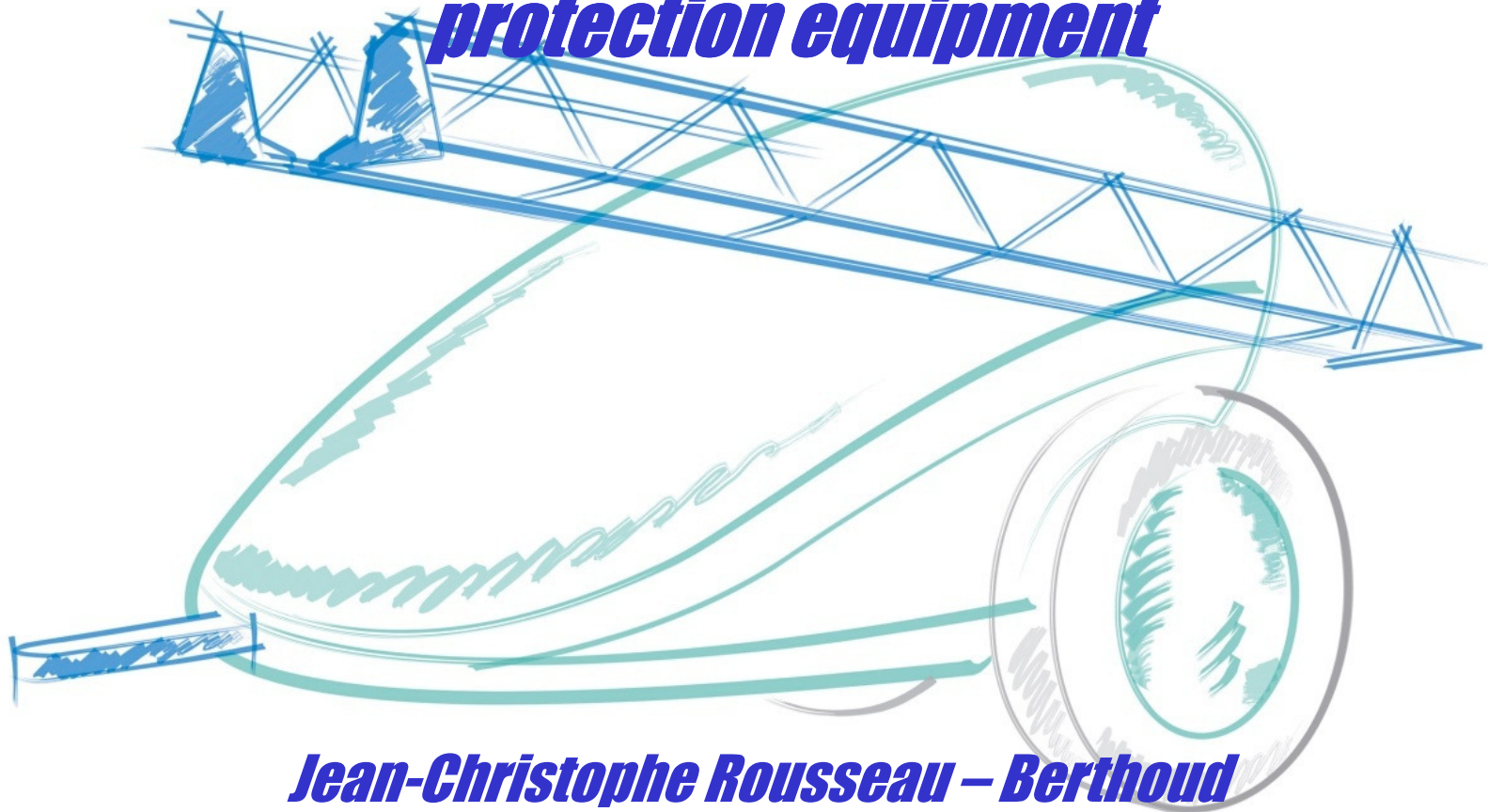


# ***European harmonised standards on plant protection equipment***



***Jean-Christophe Rousseau – Berthoud***

# Content

- **Regulations on pant protection equipment: recall of the conext**
- **Implementation of European Directives on plant protection equipment**
- **European harmonised standrads 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*
- **Environnement**
  - National regulations
  - European regulations
    - Thematic strategy on sustainable use of pesticides

# Thematic strategy

- **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 → essential requirements
  - Harmonised standard → functional or technical requirements
- A table is included in the standard that gives the correspondance 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

- **Amendment 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)
    - 1st step = Committee Draft (enquiry within TC 144)
    - 2<sup>nd</sup> 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 yeras
- EN standards refer very often to ISO standards
- More and more standards are developped 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

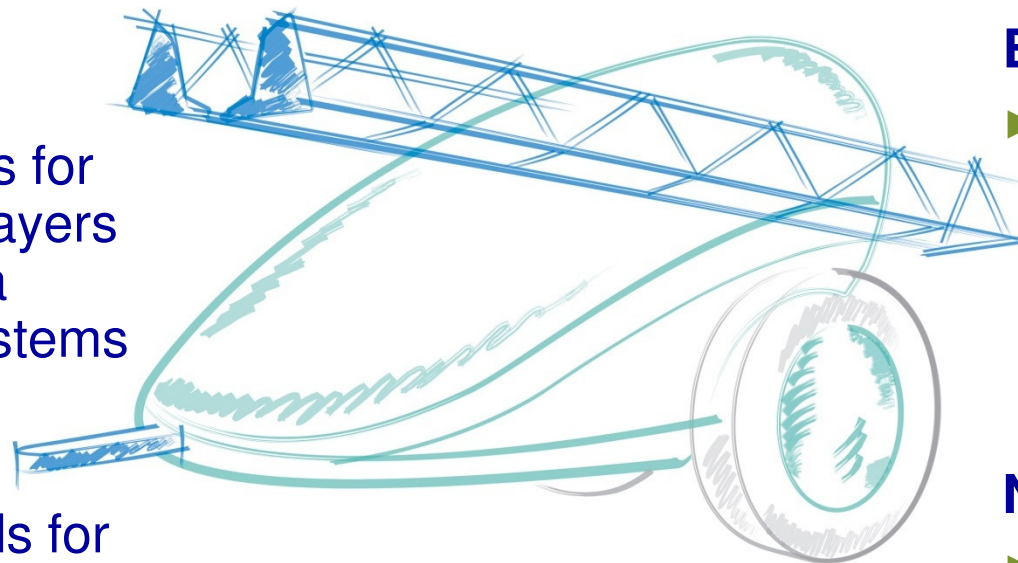
- ▶ Test methods and spray deposits measurements

## Test methods

- ▶ test methods for hydraulic sprayers and volume/ha adjustment systems

## Cleaning

- ▶ test methods for internal, and external cleaning
- ▶ Drainable volume measurement



## Boom

- ▶ steadiness

## Drift

- ▶ Measurements and classification of sprayers

## Nozzles

- ▶ Coding, test methods and droplet size measurements

## Induction hoppers

- ▶ Test methods and performance limits

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



# EN ISO 16 119 Part I, II, III

- **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

# EN ISO 16 119 Part I, II, III

- **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

# EN ISO 16 119 series

- **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

# EN ISO 16 122 Part I, II, III

- **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

# EN ISO 16 122 Part I, II, III

- **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**

# EN ISO 16 122 Part I, II, III

- **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

# EN ISO 16 122 series

- **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 amendment 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**

