Inspection of Foggers and LVM equipment in the Netherlands

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Inspection of sprayers in the Netherlands

- 1989: Start of voluntary inspections Field crop sprayers
- 1993: Start of voluntary inspections of Air-assisted sprayers
- 1997: Mandatory inspections of Field crop sprayers
- 2002: Mandatory inspections of Air-assisted sprayers
- 2005: Start of voluntary inspections greenhouse sprayers
- 2014: Implementation EU directive 2009/128/eg
- 2014 – 2016: Introduction mandatory inspections greenhouse sprayers, LVM/Fog equipment, bandsprayers and soil fumigation equipment
ULV equipment

• Definition:
  Equipment which produce very small 1-50 μm droplets means to treat pests with low Volume Application Rate

• Fogging and LVM equipment:
  – Fogging (thermal misting): Thermal energy used to create and transport droplets
  – LVM (compression misting): Energy from compressed air used to create droplets and transport by additional fan.
Fogging and LVM equipment

• No EN of ISO standard for new machines, only general requirements from 2009/127/ec, amendment on Machinery Directive.
• No EN or ISO standard available for inspection of machines in use.
• Only requirements from Annex II, 2009/128/ec
• Condition / state of maintenance very important for good operation.
• Adoption structure and relevant elements from EN-ISO 16122 standard
Fogging equipment

• General principle of operation of fogging equipment:
LVM equipment

- General principle of operation of LVM equipment:
Using the EN-ISO 16122 standard

• Base of inspections: Annex 2 of 2009/128/ec
• Before the inspection (EN-ISO 16122-1)
• During the inspection (relevant parts of EN-ISO 16122-4)
Before the inspection – Fogging machines

• Safe
  – Protection (as in EN-ISO 16122-1)
  – Protection + warning signs on exhaust pipe
  – Fuel system:
    • Fuel tank (condition, lid, fixation, leakage)
    • Fuel hoses/pipes (condition, leakage)

• Clean (high concentration!)
  – Outside
  – Inside

• Good condition
  – Condition exhaust pipe
  – Recent maintenance
  – Relevant part are renewed:
    • Spark plug
    • Valves in fuel system
    • Valves in fluid system
    • Membrane in carburettor

• Documentation available
Fogging equipment

= recent maintenance!
Inspection – Fogging Machines

A. Leaks and dripping
   i. Visual check on leakage, static and in operation

B. Spray mix agitation
   i. Visual check operation agitation system

C. Spray liquid tank
   i. Cover
   ii. Marking of content
   iii. Emptying
   iv. Cleaning

D. Measuring systems, controls and regulation systems
   i. General check
   ii. Check of manometer (if present)

E. Lines (pipes and hoses)
   i. Condition

F. Filters
   i. Presence and condition

G. Distribution
   i. Check on correct operation (ignition, starting – operation – stopping)
   ii. Visual check misting pattern
   iii. Check nozzle(s) output (little documentation available)
Before the inspection – LVM machines

• Safe
  – Protection (as in EN-ISO 16122-1)
  – Compressor (if available)
  – Electric safety
• Clean (high concentration!)
  – Outside
  – Inside
• Documentation available
A. Leaks and dripping  
   i. Visual check on leakage, static and in operation  
   ii. Dripping after shutting off  

B. Spray mix agitation  
   i. Visual check operation agitation system (pneumatic or mechanical) 

C. Spray liquid tank  
   i. Cover (leakage of air)  
   ii. Marking of content  
   iii. Empting  
   iv. Cleaning (functioning automatic flushing / cleaning) 

D. Measuring systems, controls and regulation systems  
   i. General check  
   ii. Check of manometer (if present) 

E. Lines (pipes and hoses)  
   i. Condition 

F. Filters  
   i. Presence and condition 

G. Distribution  
   i. Check on correct operation (automatic start – stop procedure)  
   ii. Visual check misting pattern  
   iii. Check nozzle(s) output (little documentation available)  
   iv. Condition fan
Conclusion

- Both machines: Important that correct maintenance has take place
- Fogging machines: proof of regular maintenance (revision of spark plug, membranes and valves)
- LVM machine: Cleanliness of machine is very important
- Most visual checks
- EN-ISO standard could be useful, but in combination with standard for new machines.