# Fire Safety Concept Tree scenario worksheet (NFPA 550)

| | | | | | |
|---|---|---|---|---|---|
| Company | : | ICL-IP Terneuzen B.V. | Behandelt door | : | 2E |
| Area | : | Maintankenpark | Date | : | 16-5-2019 |
| Scenario nr. | : | Tankputbrand M1, M3 en M4 en verlaadplaatsen | | : | |
| Scenario title | : | | | | |

| **Scenario consequences** | | | **Direct causes** | | |
|---|---|---|---|---|---|
| Constructie | : | Zie UPD | | : | |
| Apparatuur | : | Zie UPD | | : | |
| Kabels | : | N.v.t. | | : | |
| Bluswaterleiding | : | N.v.t. | | : | |
| Besmetting product | : | N.v.t. | | : | |
| Sumps | : | | | : | |
| Luchtleidingen | : | | | : | |
| Koelwater systeem | : | | | : | |
| stikstofsysteem | : | | | : | |
| | : | | | : | |
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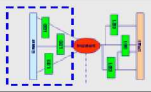
| **Preventive LOD's** | | LOD's on left side of the BOW-TIE  | **Securing LOD's** | | |
|---|---|---|---|---|---|
| nr. | | | nr. | | |
| 1 | : | Onderhoudsprocedure | | : | |
| 1 | : | ATEX zonering indien noodzakelijk | | : | |
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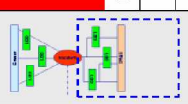
| Concept checklist | Manage method | To be used | Control item | To be used | How | How (2nd level) | To be used | Wettelijke eis | Acceptable/ Possible | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| Manage fire | Control combustion process | ☑ | Control fuel | ☑ | Control fuel properties, **or** | | ☐ | ja | | |
| | | | **OR** | | Limit fuel quantity, **or** | | ☑ | | | Insluitsystemen |
| | | | | | Control fuel distribution | | ☐ | | | |
| | | | Control the environment | ☐ | Control physical properties of enviroment, **or** | | ☐ | | | |
| | **OR** | | | | Control chemical composition of enviroment | | ☐ | | | |
| | Surpress fire | ☑ | Automaticaly surprress fire | ☑ | Detect fire, **and** | | ☑ | | | Brand- en gasdetectie |
| | | | **OR** | | Apply sufficient surpressant | | ☑ | | | Schuimblusinstallatie |
| | | | Manually surpress fire | ☐ | Detect fire, **and** | | ☐ | | | |
| | | | | | Communicate signal, **and** | | ☐ | | | |
| | | | | | Decide action, **and** | | ☐ | | | |
| | | | | | Respond to site, **and** | | ☐ | | | |
| | | | | | Apply sufficient surpressant, **and** | | ☐ | | | |
| | | | | | Accessable, **and** | | ☐ | | | |
| | **OR** | | | | Workable | | ☐ | | | |
| | Control fire by construction | ☐ | Control movement of fire **AND** | ☐ | Vent or remove fire, **or** | | ☐ | | | |
| | | | | | Confine/contain fire | | ☐ | | | |
| | | | Provide structural stability | | | | ☐ | | | |
| Manage exposed | Limit amount exposed | | | | | | ☐ | | | |
| | Safeguard exposed | ☐ | Defend exposed in place, | ☐ | Restrict movement of exposed, and | | ☐ | | | |
| | | | | | Defend the place, and | ☐ Defend against fire products, and | ☐ | | | |
| | | | | | | Provide structural stability | ☐ | | | |
| | | | **OR** | | Maintain essential enviroment | | ☐ | | | |
| | | | Move exposed | ☐ | Cause movement of exposed, and | ☐ Detect need, and | ☐ | | | |
| | | | | | | Signal need, and | ☐ | | | |
| | | | | | | Provide instructions | ☐ | | | |
| | | | | | Provide movement means | ☐ Provide capacity, and | ☐ | | | |
| | | | | | | Provide route completeness, and | ☐ | | | |
| | | | | | | Provide protected path, and | ☐ | | | |
| | | | | | | Provide route access | ☐ | | | |
| | | | | | Provide safe destination (Defend exposed in place is required) | | ☐ | | | |
| Prevent fire ignition | Control electrical energy sources | ☑ | Eliminate electrical energy sources, or | | | | ☐ | | | |
| | | | Provide barrier | | | | ☑ | | | ATEX |
| | Control heat-energy sources | ☐ | Eliminate heat-energy sources, or | | | | ☐ | | | |
| | | | Control rate of heat-energy release | | | | ☐ | | | |
| | Control source-fuel interactions | ☐ | Control heat-energy source transport, **and** | ☐ | Provide separation, or | | ☐ | | | |
| | | | | | Provide barrier | | ☐ | | | |
| | | | Control heat-energy transfer processes, **and** | ☐ | Control conduction, **and** | | ☐ | | | |
| | | | | | Control convection, **and** | | ☐ | | | |
| | | | | | Control radiation | | ☐ | | | |
| | | | Control fuel transport | ☐ | Provide barrier, **or** | | ☐ | | | |
| | | | | | Provide separation | | ☐ | | | |
| | Control fuel | ☐ | Eliminate fuel(s), or | | | | ☐ | | | |
| | | | Control fuel ignitibility | ☐ | Control fuel properties, **or** | | ☐ | | | |
| | | | | | Control the environment | | ☐ | | | |

| **Mitigation LOD's** | | LOD's on right side of the BOW-TIE  | **Securing LOD's** | | |
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| nr. | | | nr. | | |
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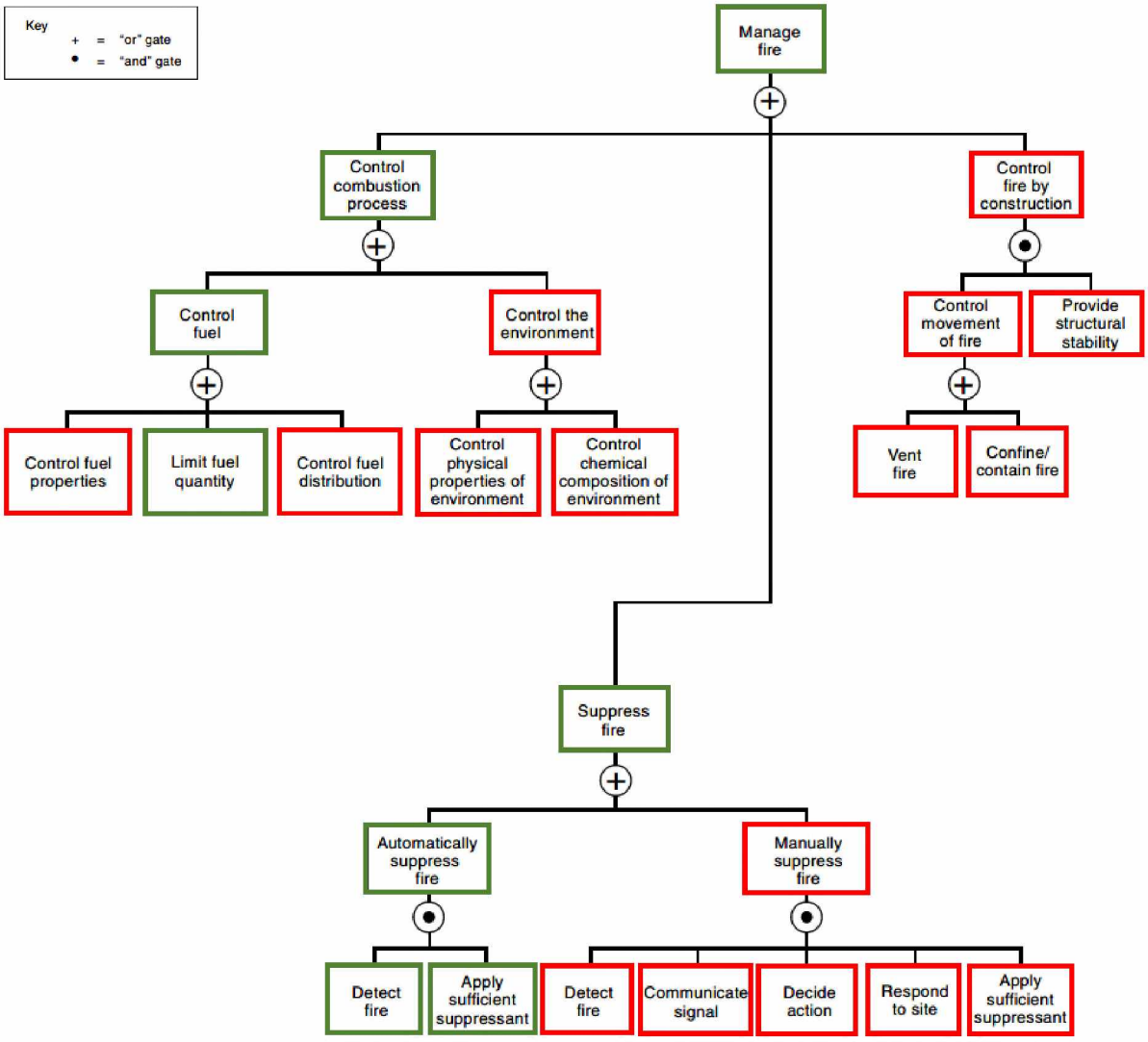
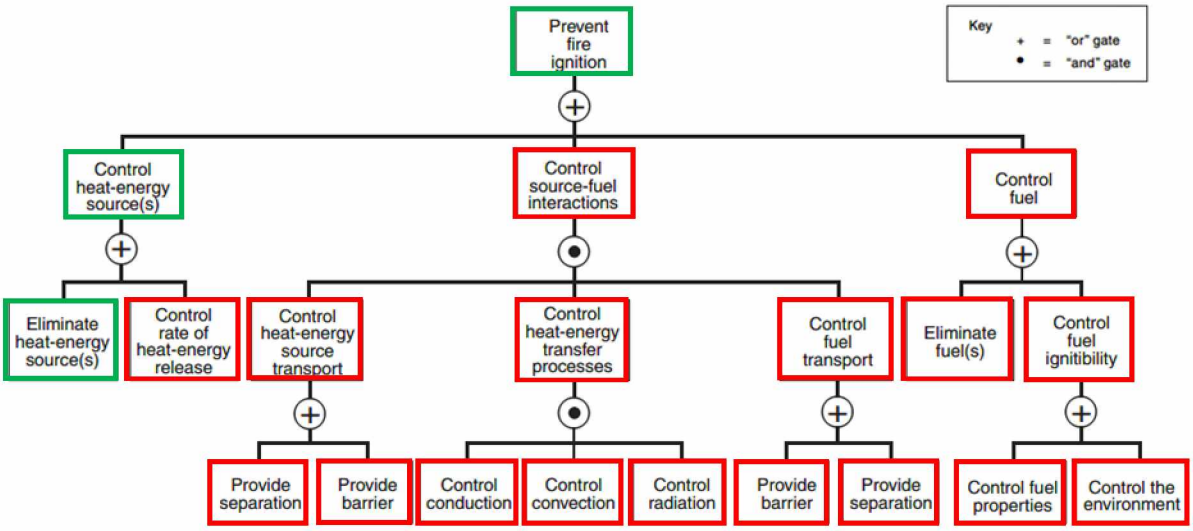

Key
+ = "or" gate
• = "and" gate
Manage fire
Control combustion process
Control fire by construction
Control fuel
Control the environment
Control movement of fire
Provide structural stability
Control fuel properties
Limit fuel quantity
Control fuel distribution
Control physical properties of environment
Control chemical composition of environment
Vent fire
Confine/ contain fire
Suppress fire
Automatically suppress fire
Manually suppress fire
Detect fire
Apply sufficient suppressant
Detect fire
Communicate signal
Decide action
Respond to site
Apply sufficient suppressant


Prevent fire ignition
Key
+ = "or" gate
• = "and" gate
Control heat-energy source(s)
Control source-fuel interactions
Control fuel
Eliminate heat-energy source(s)
Control rate of heat-energy release
Control heat-energy source transport
Control heat-energy transfer processes
Control fuel transport
Eliminate fuel(s)
Control fuel ignitibility
Provide separation
Provide barrier
Control conduction
Control convection
Control radiation
Provide barrier
Provide separation
Control fuel properties
Control the environment