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**Recent Developments and Needs for Wildfire
Fighting on the Ground:
Tactics and Technologies**

A Video Conference organized by

Global Fire Monitoring Center (GFMC) (Conference Chair)


Field Analytical Chemistry and Technology Unit/ National Technical University
of Athens (FIACU / NTUA)

European Center for Forest Fires (ECFF)

10 June 2010

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**Prescribed Fire on Terrain
Contaminated by Unexploded
Ordnance (UXO) and Land Mines**



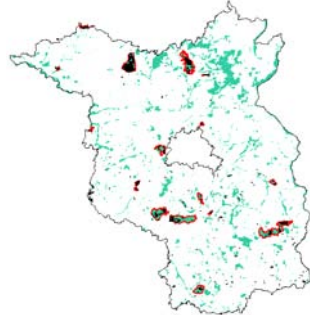
Extent of UXO-contaminated sites in Germany

ca. 700,000 ha active and former military training sites, i.e. 2% of Germany

High concentration in Eastern Germany – especially former Soviet Army training sites.

Problems:
Contamination with toxic and hazardous waste, many locations on sandy soils. UXO contamination remains unsolved.

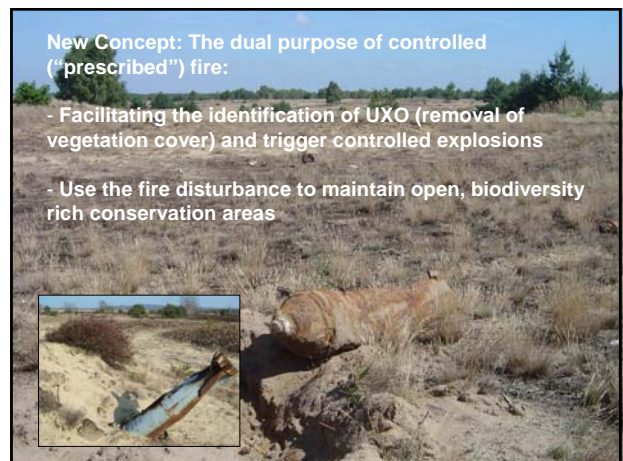
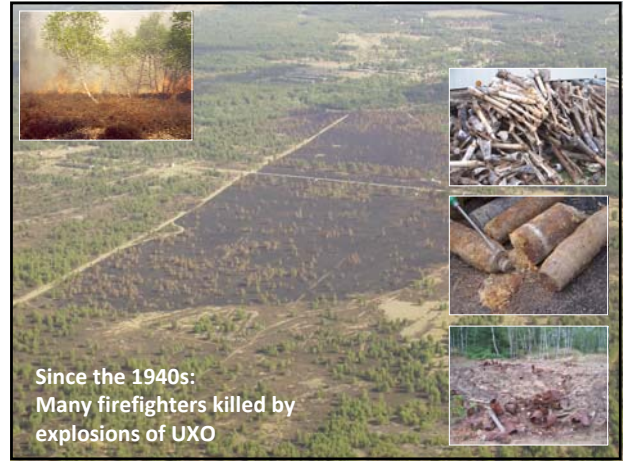
Cost of decontamination would reach an amount of binary billion €.



Due to its geopolitical location 7% of Brandenburg faced military use by the end of the 1990s, highest percentage of land-use in Central Europe

About 69,000 ha former military training sites (eastern Germany) are contaminated with a high to very high degree by (UXO) and later declared to nature reserves

Red = boundaries of former and active military training sites
Black = open heathlands due to intensive military use








Procedures and Techniques

Delineation and securing areas to be burned

Integration of roads, tracks and natural boundaries



Procedures and Techniques

Delineation and securing areas to be burned

Protection of personnel

Firefighting tank
DTF SPOT 55
(T-55)
11.000 litres water




Protected Cell for Operators
Cameras / Monitors

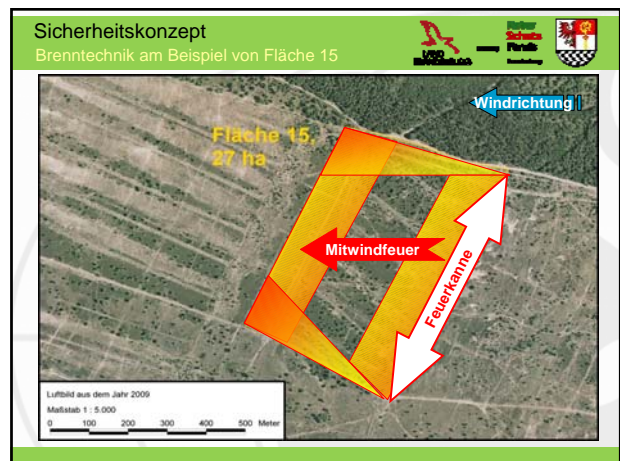
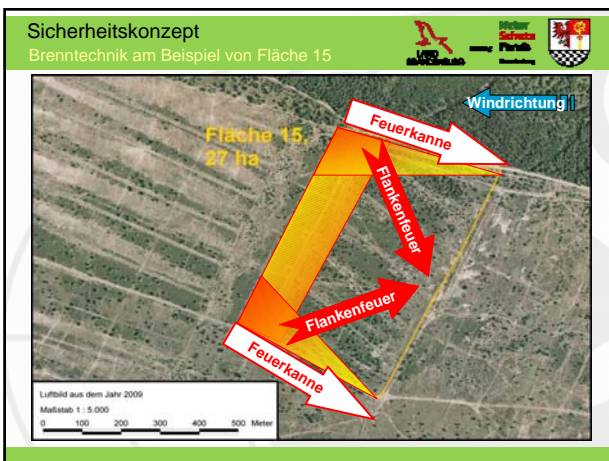
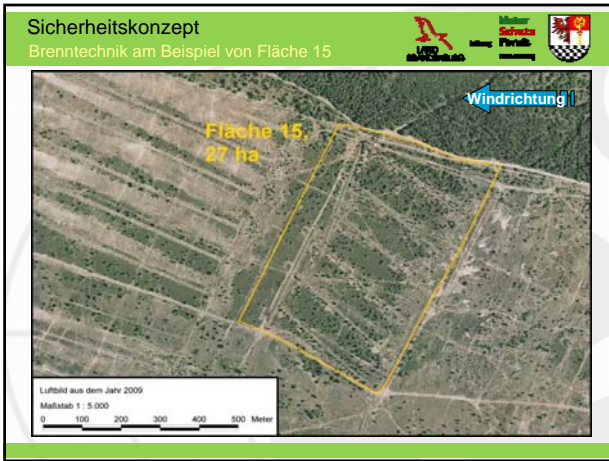


Sicherheitskonzept
Technik des Feuereinsatzes (III)

Prescribed burning action is coordinated

- From control point outside the exclusion zone (safety zone = 1000 m radius)
- Inside exclusion zone: Tactical decisions made inside armoured vehicle
- Remote ignition
- Monitoring by UAV (drone)





Sicherheitskonzept
Brenntechnik am Beispiel von Fläche 15

Fläche 15
27 ha

Windrichtung

Luftbild aus dem Jahr 2009
Maßstab 1 : 5.000
0 100 200 300 400 500 Meter

Logo: Minister Schwab, Bereich Flurholz, Baden-Württemberg

Sicherheitskonzept
Einsatz einer Drohne zur Brandbeobachtung

Logo: Minister Schwab, Bereich Flurholz, Baden-Württemberg

Sicherheitskonzept
Feuerlöschpanzer SPOT 55

Wassertank:	11.000 Liter
Schaummittel:	2.000 Liter
Löschpulver:	500 kg
Pumpleistung:	max. 1.250 Liter pro Minute (Löschwasser)

Logo: Minister Schwab, Bereich Flurholz, Baden-Württemberg


Sicherheitskonzept
Wassernachschub durch Tankfahrzeug

Logo: Minister Schwab, Bereich Flurholz, Baden-Württemberg

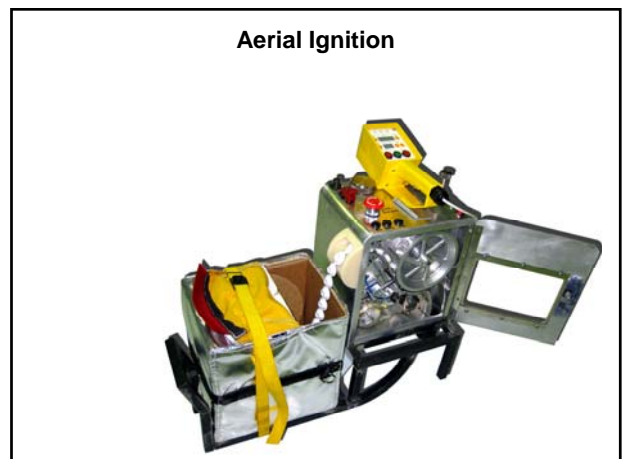


Aerial Ignition

- Ignition is a result of injecting glycol into the capsule which contains potassium permanganate ($KMNO_4$)
- Ignition after approx one minute
- Drop from helicopters



The image shows a small, rectangular, yellow and black capsule used for aerial ignition. It has a yellow top and a black bottom with a grid of holes.

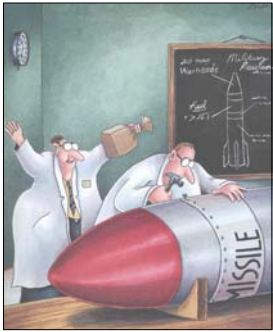






Conclusions

Benefits and Risk Management

- The controlled ignition of contaminated terrain enables the fire manager to have control and to take the necessary safety measures
- Follow-up mine and UXO clearing facilitated
- Maintenance of important biodiversity



Questions ?