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# MSIAC Global Review of Accidents

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# Accidents (big and small) still happen in all phases of munitions' life cycles!

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# Depot Storage – US – 2004

**2 people killed, 1 seriously injured**

2007 IMEMTS, Miami, Florida

# Depot Storage – Mozambique – 2007



**At least 76 killed, hundreds injured**

# Depot Storage – Thailand – 2001

Smoke rose hundreds of metres into the air


**Accident attributed to dropping of ordnance during truck unloading near a magazine. The base contained 50 storage magazines.**

# Depot Storage – Ukraine – 2004

**5 people dead**

**20,000 tons of ammunition scattered over 300 km²**

**15 villages (10 km zone) evacuated**

**$Ms spent on clean-up to this day**

# US Operational Storage Depot – Iraq – 2006

# Depot Accident Statistics 2000 – 2007

Table 2 **Major explosive events at ammunition depots, 2000–05**

| Year | Number of countries | Number of explosive events | Casualties | |
|---|---|---|---|---|
| | | | Fatalities | Injuries |
| 2000 | 4 | 4 | 111 | 236 |
| 2001 | 10 | 16 | 70 | 243 |
| 2002 | 11 | 16 | more than 1,586[20] | 558 |
| 2003 | 9 | 18 | 163 | 354 or more |
| 2004 | 9 | 18 | 91[21] | more than 1,292[22] |
| 2005 | 13 | 17 | 138 | more than 477 |

Source: GICHD and SEESAC research

**From MSIAC Newsletter**

| | | | | |
|---|---|---|---|---|
| **2006** | **10** | **11** | **52** | **56+** |
| **2007 (to date)** | **7** | **7** | **126** | **322+** |

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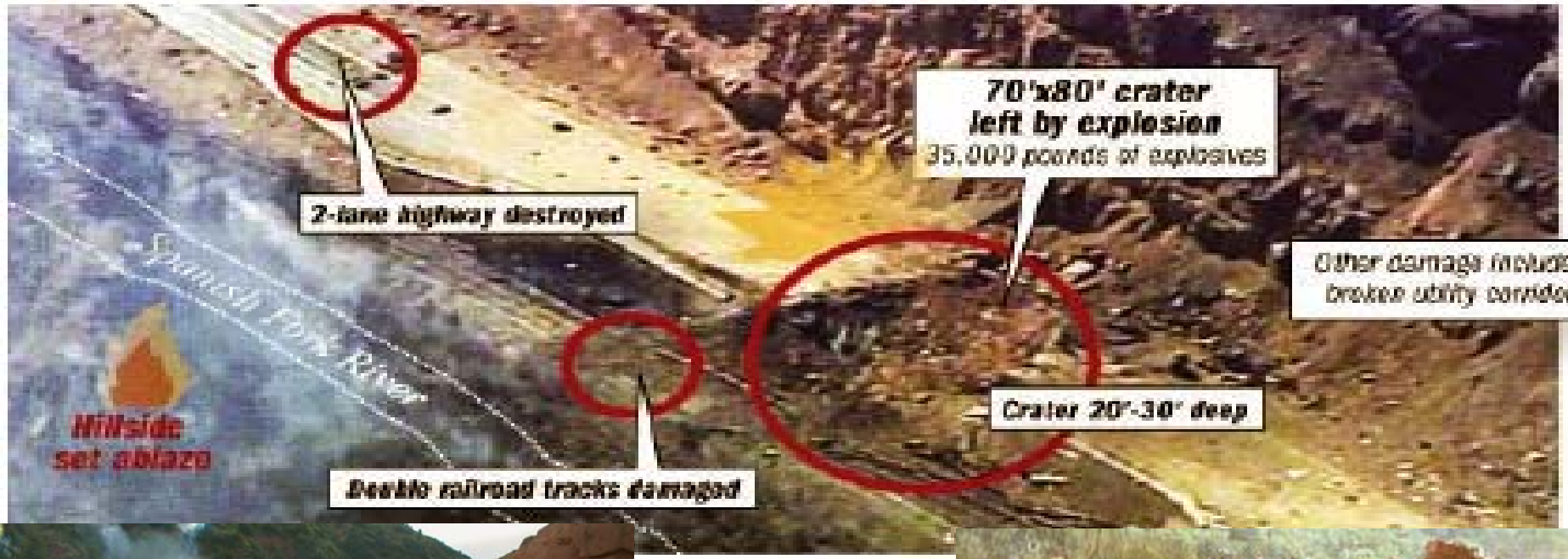
# Explosives Accidents Statistics (Other than depot storage related)

| | Dead | Injured |
|---|---|---|
| 2006 | 111 | 184 |
| 2007 (to date) | 53 | 89 |

Source – ility Engineering (www.saunalahti.fi/ility)

# Transportation – US – 2006

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# Disposal Operations – Slovakia – 2006

# Military Aircraft Accident – US – 2005 (Partial IM Example)

| | FCO | SCO | BI | FI | SR |
|---|---|---|---|---|---|
| MK-82 mod 2 TP | I | I | I | I | I |
| BLU – 111/B | IV V | IV V | V | V | I |

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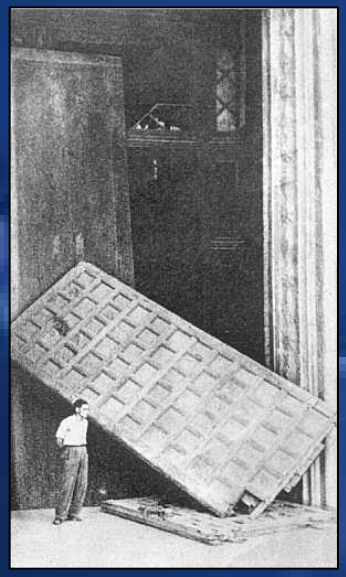
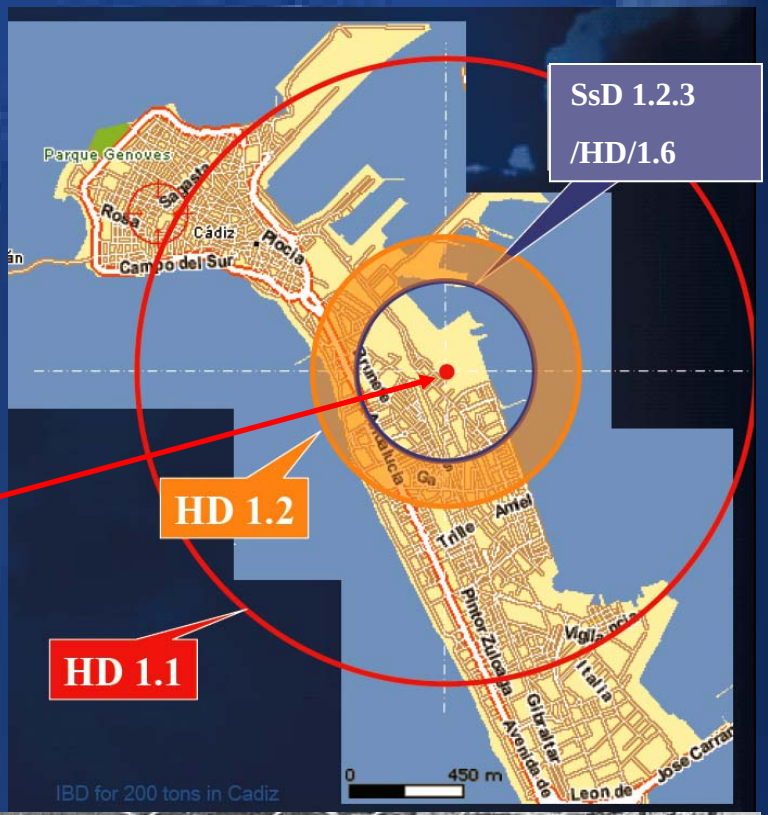
# Cadiz Spain – 1947

**1,109 sea mines - HD 1.1**



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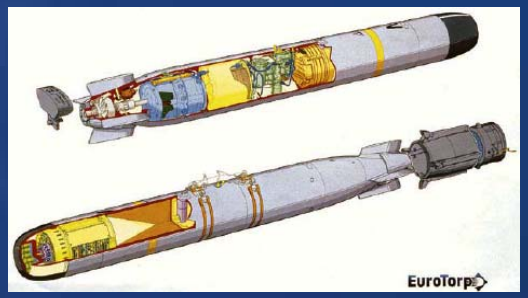
# IM Technology
# "Best of the Best" Achievements

| | FH | SH | BI | FI | SR | SCJ |
|---|---|---|---|---|---|---|
| GP Warheads | | | | | | |
| Gun/Mortar>76-mm | | | | | | |
| Gun/Mortar<76-mm | | | | | | |
| Penetrators | | | | | | |
| Shaped Charge < 100-mm | | | | | | |
| Shaped Charge > 100-mm | | | | | | |
| EFP Sub-Munition | | | | | | |
| Blast Sub-Munitions | | | | | | |
| Dual Purpose Sub-Munitions | | | | | | |
| Underwater | | | | | | |
| Anti-Ship Warheads | | | | | | |
| Anti-Air Warheads | | | | | | |
| High Performance Rocket Motor | | | | | | |
| Minimum Smoke Rocket Motor | | | | | | |
| Reduced Smoke Rocket motor | | | | | | |
| Gun propellant Large Cal. | | | | | | |
| Pyrotechnics | | | | | | |
| CADS/PADS | | | | | | |

Improvement | Pass | Fail | Not Tested

# Bridging the gap between IM and Hazard classification


- US has 29 SsD 1.2.3 items
- UK has 1 SsD 1.2.3 item
- France has 2 Murat ** (equivalent to SsD 1.2.3 plus passes FI tests) and 1 Murat *** (even better)
- There are no fielded HD 1.6 conventional munitions

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# Summary

- Accidents will continue to happen
- Big accidents have significant impact (human, mission, political, financial, etc.)
- Smaller accidents can also have significant impacts
- IM will / do reduce the probability and impact of an accident
- Major progress has been made towards developing IM technologies, and a growing number of Nations have IM policies
- Bridging the gap between IM and Hazard Classification will benefit both the IM and the users' community
- Sharing of successful IM designs and success stories is essential

# Accident Information on MSIAC Websites

- Open Website www.nato.int/related/msiac
  - Quarterly Newsletter (mostly from ility Engineering)
- Password-Protected Website
  - Accident information sources
  - NATO AC/326 accident data sharing initiative
    - Nations that share data can view other participating Nations' data
    - 5000+ explosive accidents/incidents in the databases offered by the current participating Nations (Canada, France, UK, US)