

THE 3 FIRST DAYS OF AN ACCIDENT

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INTRODUCTION

On March 11, 2008 at 2:38 p.m. our lives changed dramatically within a few microseconds. About 2100 kgs of Nitroglycol and Dynamites detonated, claiming two lives and injuring seven people. Two buildings were completely destroyed and 20 buildings were heavily damaged.



Figure 1 - Mixing house before the accident



Figure 2 - Mixing house after the accident

What emergency procedures were in place?

- Internal Emergency Plan
- Definition of crisis management group
- Company fire brigade
- Company first aid team

- First discussion with authorities about external emergency plan

DAY 1

Immediately after the accident, the alarm siren sounded to alert the company's fire brigade, first-aid team and crisis management group. The procedures specified in the internal emergency plan were immediately put into action. Some production lines (cartridging, packing of dynamites and cast booster production) were immediately stopped, while others (NG plant) were set on hold. Site personnel sought shelter in buildings specially designed for the purpose. Later on, the NG plant was stopped and molten explosives in the booster plant were treated to render them safe, all according to planned emergency procedures.

In detail, the following actions were taken:

Sequence of Actions, the first 20 minutes

* Action according Internal Emergency Plan

- Trigger the alarm, call for doctor *
- Shut down of operating plants (partially) *
- Meeting of the crisis management group *
- Discuss and decide the first measures *
- First survey of accident site *
- Safeguarding the accident site
- Take care of wounded people *
- Request external emergency services (emergency doctor, helicopter, local fire brigade) *
- First search for missing persons
- Inform authorities, CEO *
- Shut down of still operating plants

Sequence of Actions, 90 minutes

- Generating list of people inside plant
- Evacuation of plant area (except emergency personnel)
- Take wounded people to hospital *
- Check of buildings for explosives left
- Second search for missing persons
- Complete closing of plant area
- Responsibility for safeguarding of the incident site taken over by authorities in cooperation with Austin Powder GmbH

Most of the decisions taken in the first 90 minutes were made by the company's crisis management group. However, there was no system in place for recording the actions taken.

The control room was badly located, being inside the fenced area of the plant, which had been evacuated and then made a prohibited zone following the incident. This fact emerged during initial discussions with the authorities and external emergency services. A decision was then made to set up a provisional control room in an office building outside the production area.

The press also initially presented problems in that no detailed procedure was in place to take care of the journalists who were already on site or calling the site. Members of the local authorities, who were trained in dealing with the press, then provided the necessary support and helped in organizing a press conference.

Sequence of Actions, 8 hours

- Visiting of relatives of the missing persons

- Arrangement of provisional control room
- Discussion with local authorities about
 - General safety of plant
 - Setting up an improvised control room outside the plant
 - Treating press journalists, press conference
 - Next activities
- First press conference
- Arrival of the authorized expert
- Information of the authorized expert
- Inspection of the accident area by the authorized expert
- Setting up an action plan for the next day

DAY 2

At the beginning of day 2 (and also on the following days) action plans were discussed by the authorities, the company's crisis management group, experts and external services (internal and external crisis management group). Procedures were set up and duties arranged. Beginning with day 2, a record was kept of decisions and actions taken.

Sequence of Actions

- Search for missing persons with dogs
- Requesting crisis intervention team for taking care of employees and relatives
- Transferring of (uncontaminated) explosives left in production buildings and magazines
- Listing of contaminated explosives
- Evaluation of damage
- Discussions with authorities and authorized expert, start of the official investigation
- Press conferences, supplying photos

DAY 3

Sequence of Actions

- Continuous information of relatives of the missing persons
- Visit of one employee still in hospital
- First questioning of employees
- Beginning of cleanup (easy things, no contaminated explosives involved)
- Organizing of further work, setting priorities in coordination with authorities and authorized expert
- Information of employees – how do we go on?
- Requesting external support team
- Searching for “missing” explosives under the debris
 - Would you see the mixing bowl marked by the flash sign in Figure 3?
 - A detailed knowledge of possible positions of raw materials, explosives, etc. in transfer is extremely helpful



Figure 3 – Buried and trapped mixing bowls with explosives

- Organizing search teams for fragments
- Organizing ongoing search for missing persons
- Supplying documents and records to authorities
- Press conference

THE NEXT WEEKS – CLEARING OF THE SITE

In total, about 9 weeks were required to clear up the site and during this time, all plant remained shut. Production only re-started once the all cleanup activities were complete. See Figure 4 for an overview.

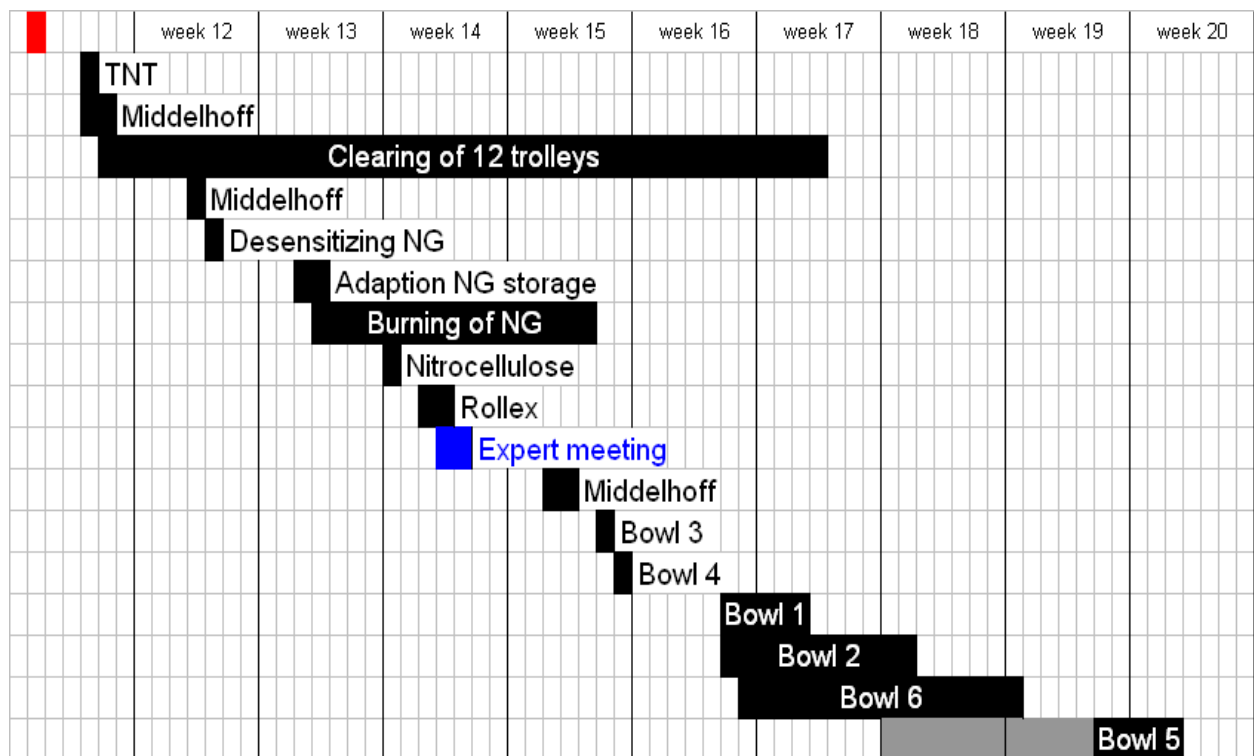


Figure 4 – Chart of explosives cleanup activities

WHAT HELPED?

- Quite good emergency planning
- All safety and technical plant managers were available
- Company fire brigade and first-aiders - well trained, equipped and experienced
- Trained people could take over tasks at their own initiative
- Business managers were available
- Do always work in compliance with regulations
- Good relationship with authorities

WHAT COULD HAVE BEEN IMPROVED?

- Lot of details in the emergency planning were improved
- Locating of control room outside of possible danger zone
- Documentation of the sequence of decisions and activities
- Press work (was handled well only due to help by local authorities)
- Setting up of an external emergency plan together with local authorities (now required by law) including
 - Creating of (worst) case scenarios with detailed action planning
 - Performing of emergency trainings with all possibly involved people, emergency services, authorities, etc.

RECOMMENDATIONS

- Identify and assess possible major incidents, set up likely and worst case scenarios
- Set up an emergency plan based on the findings of Risk Assessments and handle consequences on
 - Employees and other personnel on-site
 - The public
 - Sensitive environmental areas
 - The business

- Emergency plan should include
 - Emergency organisation (clear line of command, involvement of local emergency services, authorities)
 - Communication (internal, external), alarms
 - Information about danger zones, dangerous goods, etc.
 - Rescue, shelter and evacuation
 - Maps
 - Available trained personnel
 - Personnel head count system
 - Emergency services
 - Equipment (PPE, medical equipment, containments, sprinkler systems, vehicles, etc.)
 - Isolations (electric energy, gases, steam, acids, etc.)
 - Training and drills

CONCLUSION

It is essential to have plans in place for dealing with all reasonably foreseeable emergencies. These plans should include arrangements for involving public emergency services. Training in emergency procedures and practice in carrying out emergency drills are essential. People will only perform well under extreme stress if they have received the necessary training and practice.

TAKE HOME MESSAGES

- Do have a good emergency plan prepared, including emergency organization, communication and scenarios
- Do train the emergency procedures with all employees (including joint drills with local authorities and services)
- Don't forget about the press
- Have a draft press release prepared that can be amended to the actual event at short notice (be aware about copy deadlines for newspapers/TV)
- Senior management should be trained on and prepared for crisis management (stress situation)
- Expect the unexpected