

Hazards and preventive measures for using Initiation Systems in blasting applications

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To open a bottle of champagne, we aim at the ceiling and turn our face aside. That's a safe act learned through experience.

The objective of this paper is similar. To provide to people who are handling explosives, a simple mnemonic tool that may be useful in preventing incidents during blasting.

There is a current trend to regulate strongly, to legislate everything. In terms of the prevention of accidents rules and regulations are also important. Thus having laws and rules that are well written and properly interpreted, should never be considered a negative.

The ocean of rules, regulations, procedures, plans, etc. in which are involved with in the current legislation on prevention, can possibly lead to the neglect of the genuine and simple purpose identifying the risks to avoid accidents.

We do the paperwork, filed the documents received, issue protective equipment required, give a talk if possible ... and we are left with the feeling of accomplishment and especially with the conviction that if something happens, "we are in the law".

But unfortunately, accidents and incidents continuously happen and we wonder the same thing. Couldn't we have done something more to avoid them?

I have collected in the presentation a summary of typical hazards observed using the more commonly available initiation systems that has caused real accidents and incidents that in Spain and also within other countries where MAXAM is operating.

These are:

Static electricity

Erratic and induced currents

Misfire

Fly rock

Disposal of explosives waste and others

Thus, empirically as a result of the analysis of real accidents and in practice simple rule of thumb based on a single premise can be derived: "the simple is easy to remember and consequently capable of being fulfilled".

With this premise of simplicity, we show the analysis of the causes of accidents involving explosives, propose solutions, which actions to take, identify areas for change, even to the

development of rules or regulations to prevent them. For each of these issues, the objective was to have the minimum terminology to be an easily remembered mnemonic and therefore has to be communicated with relative ease.

The two causes are imprudence and ignorance.

In all accidents the above are reported to occur either singly (or both simultaneously).

The two proposed solutions. To make aware and to get the knowledge.

What should we do to get these objectives? Two actions are proposed: Inspections and training.

It is necessary to act and work in two fields. The individual and the team. In the team, it must be taught how the safety of all depends of the effort of each individual.

What follows are quotes mostly spoken by the most experienced blasters. In them, it is possible to clearly to see the disastrous role that, paradoxically, the experience and confidence may play in some cases when working with explosives:

"We always did well... and nothing ever happened"

"The explosive is very safe"

"Let me tell you one thing..." I spent twenty years shooting"

"The rules are very well when there is no hurry".

"Me, when I do something forbidden, I always do very carefully"

Let me introduce two cardinal rules:

1. Explosives are made to detonate. Always treat it with the same respect as the first time you used it.
2. If you have any doubt, do not take a chance. Ask the right question.

The first rule is there to prevent reckless behaviour, while the second is directed against another critical cause, ignorance.

The current legislation on the prevention of occupational risks, with its strengths and weaknesses, has shown progress, but for some it lacks a safety emphasis. Sometimes we make the mistake of considering the law as an obligation rather than a tool to achieve an end. Machiavelli correctly believes we can and we must affirm that "in OH&S, prevention is the preferred way and always ensures the best way forward".

I would also say to those who, acting under the current regulations, spread messages along the lines of "do not think, act according to the procedure", that history does not agree with that attitude and approach. Just check MAXAM (before UEE) that has been a Spanish company leader in the domestic market of explosives and fully consolidated on five continents, , continues to enforce a short slogan clear and unequivocal: "trust but verify" ,this following the

unfortunate accidents that have been occurring throughout its centennial history. That is, we must never forget that safety inevitably revolves around the human factor.

Therefore, our efforts must also be specifically aimed at getting our blasters to be more and more safety conscious and capable; they must learn that their everyday acts must be intrinsically safe. Only then let us uncork the champagne.