

Fire: the first essential measures to limit losses

Every minute counts in a fire. The feedback shows the importance of a rapid and appropriate response to this dangerous phenomenon, which occurs in more than 60% of the industrial events contained in the ARIA database. Bearing in mind that in 90% of cases, the emergency services take 21 minutes, 16 seconds to intervene in the event of a fire and 15 min on average,¹ the measures taken by the operator in the first few minutes are essential.

To bring a fire under control quickly and limit the damage, three actions must be undertaken quickly and simultaneously:

- detect and protect on-site personnel by informing them of the need to evacuate the premises or move to a safe location;
- call for outside assistance;
- implement the initial extinguishing measures by the personnel present on-site to contain or extinguish the fire, in the most favourable cases, pending the arrival of outside assistance.

	Good practices	Practices to be improved
Alert	<p>ARIA 56768 – 18/02/2021 – Drôme At around 3:20 a.m., a fire broke out in a degreasing tank located in the extension of a company specialising in processing metal elements for leather goods. No employees were present on the site at the time. The fire was detected at 3:30 a.m. when an external surveillance company triggered the alarm. [...]</p> <p>ARIA 54714 – 25/07/2019 – Haute-Garonne At 1:20 a.m., a fire broke out in a geobox located against the outside wall of the workshop of an electronics company. The alert was raised in the guardhouse by 2 fire detectors. The guard was able to extinguish the fire using 2 fire extinguishers. He called the fire brigade and the site's safety officer. [...]</p> <p>ARIA 57972 – 29/03/2021 – Essonne At around 4 a.m., a security guard noticed a fire during a safety patrol in a paint manufacturing site [...]</p>	<p>ARIA 57857 – 04/07/2021 – Gironde An explosion occurred in a metal bitumen tank at around 3:30 a.m. [...]. The emergency services were alerted by an employee at the establishment, who had been contacted by the security guard at another installation. The latter also called the contact numbers indicated at the site's entrance, but the calls went unanswered. [...]</p> <p>ARIA 56997 – 23/03/2021 – Cher At around 5 a.m., a fire broke out in a bin at a non-hazardous waste storage facility. A passer-by noticed smoke and alerted the emergency services. [...]</p> <p>ARIA 56345 – 22/10/2020 – Seine-Maritime A fire broke out during the night in the workshop of an asbestos removal facility on the site of a railway company. [...]. The effects of the fire were observed at around 7:30 a.m. when the service provider's team in charge of asbestos removal arrived on site. [...]</p>
Implementation of the initial measures	<p>ARIA 58023 – 25/08/2021 – Gironde A fire broke out on a toluene container located in a chemical wholesale business. [...] The operator began fighting the fire immediately with a 6-litre spray foam fire extinguisher, then the site's QHSE coordinator used a second 50 kg powder extinguisher to bring the fire under control. [...]</p> <p>ARIA 57855 – 02/08/2021– Haut-Rhin A maintenance technician noticed a fire on a production line in a non-woven fabric factory. He raised the alarm, called the fire brigade and disconnected the energies. The site was evacuated. [...]</p> <p>ARIA 56563 – 07/01/2021 – Isère An explosion occurred in a metallurgy company, followed by crackling noises on the walls of the site's zirconium ingot machining shop. [...]. Three powder extinguishers were used to fight the fire, and the operator contacted the fire brigade. A fourth extinguisher was needed to put out the fire. The fire had been brought under control by the time the fire brigade arrived on site.[...]</p>	<p>ARIA 56225 – 17/10/2020 – Ain A fire broke out in a storage cell at a logistics warehouse containing mainly food items [...]. The fire safety system detected the fire, and firewall doors were closed. The alarm panel in the guardhouse indicated that fire had been detected, but the guard acknowledged the warning without double-checking or alerting emergency services. After noticing a series of alarms, he decided to investigate and alerted the emergency services 15 min. after the first alarm sounded. When the emergency services arrived on site, the area in question was completely engulfed in flames, and the structure had partially collapsed. [...]</p> <p>ARIA 57876 – 01/09/2021 – Oise The fire broke out in a pile of 17 t of scrap metal, measuring less than 2 meters in height, near the shredder of an ELV (end-of-life vehicle) processing centre. The security guard had noticed smoke while conducting his rounds. The guard attempted to intervene but could not get the fire hose to work. [...]</p>

¹ Statistics on fire and rescue services – 2021 edition – Directorate-General for Civil Protection and Crisis Management. The response time is the time between the triggering of the alarm and the arrival of the first vehicle at the site of the fire.

The following lessons can be drawn from the fires, and particularly from the initial measures that were implemented. The definition and implementation of an intervention strategy based on material resources and organisational measures are essential and must allow operators to:

Know how to detect emergencies and protect and/or evacuate personnel

- ✓ Appropriate organisation must be set up and the equipment provided to ensure that a fire can be detected within minutes of its outbreak (staff presence, fire detection network, surveillance camera). A “double-checking” procedure must be drawn up to confirm non-human detection;
- ✓ Everyone must be familiar with the personnel evacuation and safety procedures (alarm type, evacuation route, assembly point, etc.). Particular attention must be paid to people who are unfamiliar with the premises (visitors, trainees, employees from external companies, etc.).

Sound the alert as soon as possible

- ✓ The alert chain’s procedures must be defined beforehand, as well as the content of the message sent to the external emergency services (fire area, materials involved, potential danger in the vicinity, etc.);
- ✓ The site must be accessible to the emergency services, and a parking area must be available for emergency vehicles. It is also desirable to have a reception area where the emergency services can be briefed on the situation, particularly regarding the safety and/or evacuation of personnel, and the initial measures used to contain the fire.

Implementation of the initial measures

- ✓ Without prejudice to the safety of the staff, authorised and trained personnel (including the security guard, and where appropriate, external contractors) must be able to use the emergency firefighting equipment. This primarily includes portable fire extinguishers and hose reels. Their type must be adapted to the possible dangers encountered and their location must be optimised and operational. Where appropriate, special attention must be paid to the choice and quality of the foam used;
- ✓ Fixed fire extinguishing systems (water sprinkler, extinguishing by foam, powder or gas), generally installed in places where the risks are serious or localised or where the equipment to be protected has significant value (computer server, etc.), must be triggered, either automatically or manually (remember to ensure that the operating valves are accessible);
- ✓ Cutting off energies must be initiated (by sectors or throughout the site);
- ✓ Certain installations may need to be secured;
- ✓ Firefighting water must be confined, and networks closed off;
- ✓ Materials likely to complicate the fire should be moved.

These measures must be anticipated and incorporated into the site's operating procedures and safety instructions. The site's safety instructions must be concise and cover all possible situations. The proper information and regular emergency preparedness training of operators is also essential to enable them to react calmly and quickly, knowledge of the various types of fire and how to extinguish them. Regular drills (in conjunction with the emergency services where appropriate) must be organised. The purpose of these drills is to test the alarm systems (operation, alarm audible to everyone and interpreted correctly), understand the evacuation times, check that there is free movement towards the emergency exits, and remind staff how to operate first response equipment. If necessary, the safety organisation must be modified to correct any errors made during these exercises, and in light of the problems encountered regarding the safety instructions.

Furthermore, all of the site's fire safety related elements should be maintained in a permanent state of operation and should be an integral part of the maintenance procedures. All site procedures should be regularly reviewed and updated as required.

ARIA 46253 – 10/02/2015 – Jura

A fire broke out in the shredder of a hazardous waste transfer and sorting centre. [...] The operator intervened with 2 fire extinguishers to put out the fire. His colleagues arrived and were able to **actuate the extinguishing system manually**. [...] Upon arriving at the site, the platform manager noticed that **the fire detection and sprinkler system was in test mode**. The fire extinguishing system had therefore been unable to operate in automatic mode. Maintenance work performed on the system the previous day was attributed as the cause of the malfunction. The service technician left the site at 5:30 p.m. the previous day, indicating in the exit log that everything was OK. However, following analysis, it was determined that the system had remained in “test” mode after the technician had left. This configuration had effectively **neutralised the automatic activation of the extinguishing system**. [...]

