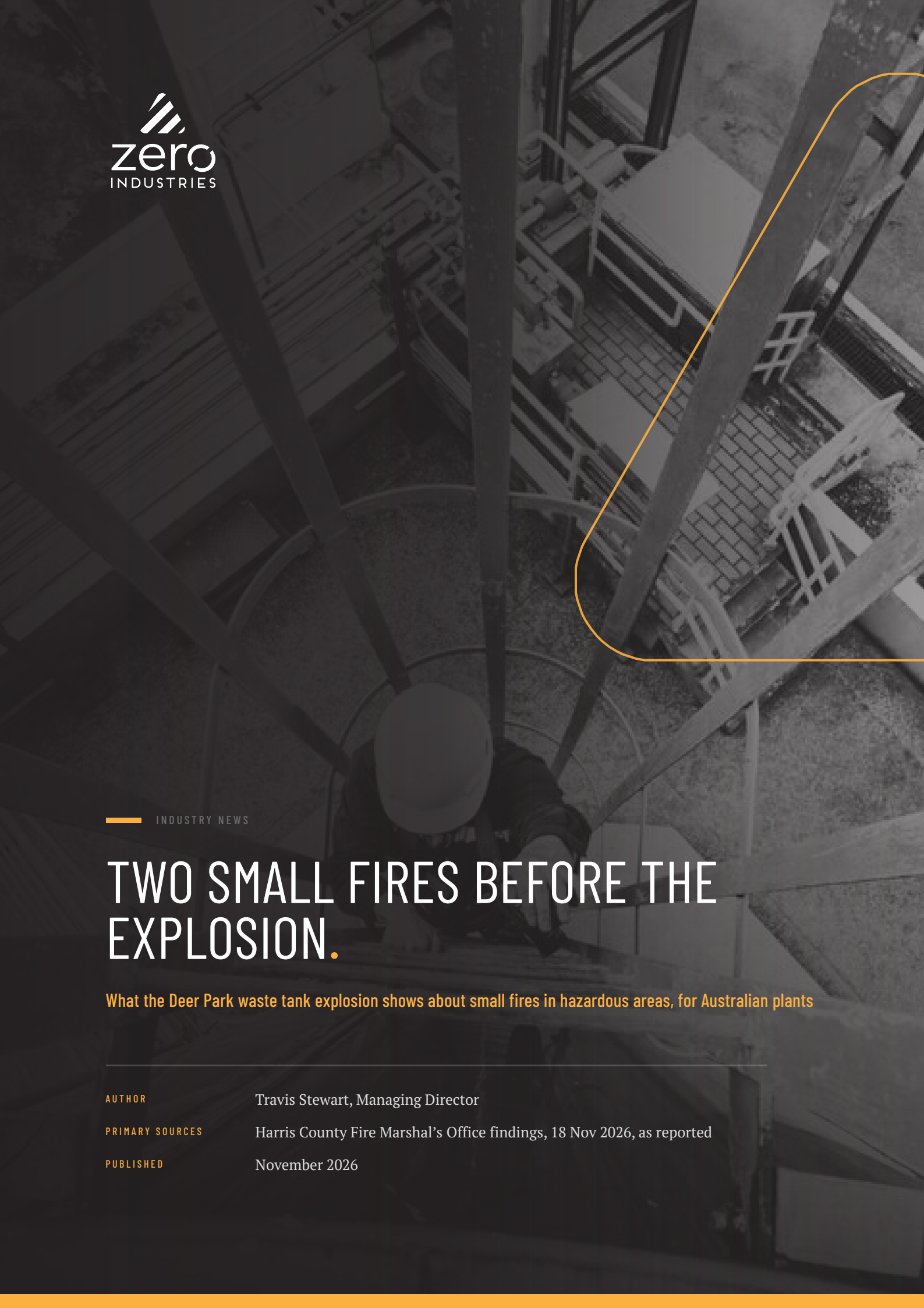


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INDUSTRY NEWS

TWO SMALL FIRES BEFORE THE EXPLOSION.

What the Deer Park waste tank explosion shows about small fires in hazardous areas, for Australian plants

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PRIMARY SOURCES Harris County Fire Marshal's Office findings, 18 Nov 2026, as reported

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ABSTRACT.

On the evening of 17 November 2026, hydrocarbon vapours ignited inside a vessel treating hazardous liquid waste at the Clean Harbors facility near Deer Park, Texas. The explosion and fire badly damaged the vessel. A supervisor was taken to hospital and was reported to be in a stable condition, and no one else was hurt. The vessel had a pressurised nitrogen system and a connection to an incineration system, both intended to stop its vapours igniting. The Harris County Fire Marshal's Office found evidence of two smaller fires in the same treatment process in the week before, in which escaping vapours ignited outside the vessel, and said it had received no reports of either. Its preliminary findings suggest the ignition mechanism may have been similar in all three events. The ignition source has not been determined, and the investigation is open. This paper sets out what the authorities have confirmed and what is still unknown, then reads the confirmed facts against AS/NZS IEC 60079.10.1:2022 and NFPA 69:2024. A small fire in a hazardous area shows that a flammable atmosphere and an ignition source have already met. For an Australian plant, the paper covers when such a fire is a notifiable incident, what it says about the classification, and what an inerted vessel's protection depends on.

KEYWORDS: HYDROCARBON VAPOUR; INERTING; INCIDENT REPORTING; NOTIFIABLE INCIDENT; HAZARDOUS AREA CLASSIFICATION; GRADE OF RELEASE

CONTENTS.

01 INTRODUCTION 03

02 WHAT HAPPENED 04

03 READING THE CONFIRMED FACTS 07

04 WHAT IT MEANS FOR AN AUSTRALIAN PLANT 10

05 CONCLUSIONS 12

REFERENCES 13

01 INTRODUCTION.

One person was hurt. A supervisor at the facility was taken to hospital with chest pain and possible inhalation exposure, and city officials reported the next morning that the worker was in a stable condition. All other employees were accounted for (KTRK 2026, KPRC 2026, Fox 26 2026b).

Residents across the surrounding area heard and felt the explosion, with reports from communities including Sheldon and Crosby. Air monitoring found nothing above normal readings, and no shelter-in-place order was issued (KPRC 2026). The county judge said everyone had reacted quickly, and that it could have turned out far worse (Fox 26 2026a).

We write about it six days on because of what the fire marshal's office found. The same treatment process had caught fire twice in the week before, and the office had received no reports of either fire (Fox 26 2026b). It told reporters the earlier fires matter because they show unintended ignition had already happened in the process (KHOU 2026).

Plants often carry on after a small fire or a puff, because nothing much happened. This paper reads the Deer Park sequence for what such a fire tells a plant. It reports only what the authorities have confirmed, sets out what is still open (Section 2.3), and draws no conclusion about the cause. We write for Australian plants that handle flammable liquids and vapours, including waste treatment, solvent recovery, chemical processing and fuel storage.

02 WHAT HAPPENED.

2.1 THE FACILITY AND THE VESSEL

The facility is in Harris County, Texas. It has a La Porte mailing address but is within Deer Park's extraterritorial jurisdiction. It handles hazardous and industrial waste, including bulk liquids and solids, laboratory chemicals and compressed gases (KHOU 2026). The county judge described it as a site that manages industrial waste and cleans tanks used by other companies (Houston Public Media 2026).

The vessel involved treated hazardous liquid waste, which the fire marshal's office described as industrial wastewater containing hydrocarbons (KHOU 2026). It had two safeguards intended to stop flammable vapour igniting. One was a pressurised nitrogen system. The other was a connection to an incineration system that disposed of the hydrocarbon vapours by controlled combustion (Fox 26 2026a).

2.2 SEQUENCE OF EVENTS

Table 1 sets out the sequence from the statements of the fire marshal's office, the company and the City of Deer Park, as reported. The fire marshal's formal report is still to come (Fox 26 2026b).

TABLE 1. SEQUENCE OF EVENTS, NOVEMBER 2026

WHEN	EVENT
The week before 17 Nov (dates not given)	Two minor fires in the facility's hazardous liquid waste treatment process. In both, hydrocarbon vapours escaped from the treatment process and ignited (KTRK 2026).
17 Nov, about 8.48 pm	Hydrocarbon vapours ignite inside the treatment vessel. The pressure rises rapidly, and an explosion and fire follow (JOIFF 2026, KHOU 2026).
17 Nov, evening	The Deer Park and La Porte fire services, Channel Industries Mutual Aid, the Harris County Hazardous Materials Response Team and the fire marshal's office respond. The fire is out within about an hour (KPRC 2026). Crews apply a foam blanket to the open tank through the night (KTRK 2026).
17 Nov, night	A supervisor is taken to hospital. Air monitoring by the agencies and the cities detects nothing unusual, and no shelter-in-place order is issued. At a briefing, the county judge says the information available describes the tank's contents as mostly water with trace chemicals, nothing that would explain an explosion of that size (KPRC 2026).
18 Nov, morning	The fire marshal's office releases its findings on the cause and the two earlier fires. Deer Park officials report the worker stable (KTRK 2026, Fox 26 2026b).
18 Nov, later	The fire marshal's office tells reporters it received no reports of either earlier fire before the explosion, and learnt of them from fire patterns at the scene and interviews with employees. The City of Deer Park says it was unaware of any earlier issues at the facility. The company declines to comment while it conducts its own investigation (Fox 26 2026b, KHOU 2026).

Sources: as shown in each row. Times are local (US Central).

The company has said the vessel was badly damaged, and that normal operations will not resume until the investigation and the necessary remediation have been addressed (Fox 26 2026a, KPRC 2026).

2.3 WHAT IS CONFIRMED AND WHAT IS STILL OPEN

Table 2 sets out what the authorities have confirmed, and Table 3 what they have said is still open. Each row names the body that said it, as reported up to 23 November 2026.

TABLE 2. WHAT THE AUTHORITIES HAVE CONFIRMED

ITEM	FINDING	SAID BY
Cause of the explosion	Hydrocarbon vapours ignited inside the treatment vessel, causing a rapid build-up of pressure, an explosion and a fire. The physical evidence supports ignition within the vessel	Fire marshal's office (KHOU 2026)
Earlier fires	Evidence of two minor fires in the same treatment process in the preceding week. In both, hydrocarbon vapours escaped from the process and ignited outside the vessel. Found from fire patterns at the scene and interviews with employees	Fire marshal's office (KTRK 2026, Fox 26 2026b)
Reports of the earlier fires	The office received no reports of either fire before the explosion. The city was unaware of any earlier issues at the facility	Fire marshal's office, City of Deer Park (Fox 26 2026b)
Investigation status	The on-scene origin and cause investigation is complete. The formal report is pending and may be supplemented	Fire marshal's office (Fox 26 2026b, KHOU 2026)

TABLE 3. WHAT IS STILL OPEN

QUESTION	STATUS	SAID BY
What ignited the vapours	Undetermined, along with the circumstances that allowed the vapours to ignite	Fire marshal's office (Fox 26 2026b)
Whether the nitrogen system was working as intended	Not stated. Further investigation is needed to find why the safeguards did not prevent the explosion	Fire marshal's office (KPRC 2026, KHOU 2026)
What was in the vessel	The description available on the night was mostly water with trace chemicals. How that relates to the hydrocarbon vapours has not been explained	County judge (KPRC 2026)
The earlier fires: when, who was told, what was done	Dates not provided. Not confirmed whether any other agency was notified. Not established whether the equipment was taken out of service after either fire, or when it restarted	Fire marshal's office (Fox 26 2026b)
Whether the earlier fires could have predicted or helped prevent the explosion	Not determined	Fire marshal's office (KHOU 2026)
The company's own findings	Its internal investigation is under way, and it has made no statement on findings	Company, City of Deer Park (KHOU 2026)

03 READING THE CONFIRMED FACTS.

3.1 THE SAME IGNITION IN A DIFFERENT PLACE

In its statement of 18 November, the fire marshal's office linked the three events in one preliminary finding. It said the ignition may have occurred through

THE PRELIMINARY FINDING

"…a mechanism similar to those associated with the previous fires."

HARRIS COUNTY FIRE MARSHAL'S OFFICE, 18 NOVEMBER 2026

The difference was where the vapour was when it ignited. Twice, vapour escaped from the process and burned in the open. The third time it ignited inside the vessel's vapour space, and the confined combustion produced a rapid rise in pressure (Table 2).

Fire and explosion need the same three things: a flammable substance, air and an ignition source. AS/NZS IEC 60079.10.1:2022 Clause 4.1 sets out the safety principle in those terms. Where an explosive gas atmosphere may occur, the aim is to eliminate either the likelihood of that atmosphere around an ignition source, or the ignition source itself. Where neither can be done, the measures chosen should make the coincidence of the two as unlikely as is reasonably practicable.

A fire inside a hazardous area means that coincidence has already happened. It is the primary combustion. The flammable atmosphere and the ignition source have met, and what limited the result was the amount of material available to keep the combustion going and the space it had to expand into.

Those conditions change with the process, the weather and the state of the plant. The ignition source need not change at all.

On site, a small fire in a hazardous area is sometimes met with relief, since nothing exploded. That reading measures the hazard by the size of the event. Deer Park shows the sequence that follows from it: two events small enough to go unreported, then a third, possibly by the same mechanism, where the vapour was confined.

3.2 WHAT A SMALL FIRE SAYS ABOUT THE CLASSIFICATION

A classification grades each source of release by how often it releases and for how long. A secondary grade release is one not expected in normal operation that, if it does occur, is likely to occur only infrequently and for short periods (AS/NZS IEC 60079.10.1:2022 Cl 3.4.4). Annex B.3 adds that the secondary grade assumes a release will be found soon after it starts and fixed as soon as possible, which depends on regular monitoring and maintenance.

A release that has ignited twice in a week is evidence against both assumptions. Either the plant is operating outside the conditions the classification describes, which needs correcting, or the release is more frequent than its grade allows, and the zone type, its extent and the equipment selected for it may need to change.

The standard provides for this. Documented evidence about how a plant runs may support a classification, and an area could be reclassified on new evidence (Cl 5.1). The classification should be updated for any plant or operational change and reviewed during the life of the plant (Cl 4.2). A release from a condition that could reasonably be expected as part of plant operations, such as corrosion, is not a rare malfunction (Cl 3.7.3, Note 2).

The fire also raises a question about the ignition source. A classification, with the equipment selected for its zones, controls the ignition sources that equipment can present. Clause 1 notes that a site may have many ignition sources apart from equipment, which need precautions of their own. A fire shows that an ignition source was present where the release reached, and finding it is part of investigating the fire, whether or not the classification needs to change.

Neither question can be answered for an event that was never recorded. An event that is recorded but not investigated leaves its cause in place to act again.

3.3 WHAT THE VESSEL'S SAFEGUARDS DEPEND ON

The interior of a tank holding a flammable substance may be considered a hazardous area even when an explosive atmosphere is not normally present, because air can enter it (Cl 4.3). Where a control such as inerting is used, the same clause allows the interior to be left unclassified or given a less onerous zone. The reliability of the control should match the reduction claimed, and the clause gives a safety integrity level assessment as an example of a suitable study.

NFPA 69:2024, the US standard on explosion prevention systems, sets out what an inerting system has to achieve. The oxidant concentration must be kept low enough to prevent a deflagration (7.1.1). The design must consider variations in the process and in the materials processed (7.2.1(2)).

The limiting oxidant concentration is based on the worst credible gas mixture (7.7.2.2), and instruments are installed at as many points as needed to ensure the reduction throughout the protected system (7.7.2.1). Where purge gas is used in lines collecting flammable mixtures and the collection system ends at a flare or incinerator, an additional backflash prevention or protection system is required (7.2.4.1).

Read together, these provisions make one point. The protection comes from the condition of the vapour space, and a nitrogen supply that is turned on does not by itself show that condition. For a vessel receiving waste, the worst credible mixture depends on what may arrive, which can differ from what the documents describe. At Deer Park, the description available on the night and the vapours the investigators found have not yet been reconciled (Table 3).

The investigators have not said whether either safeguard played a part, and this paper draws no conclusion about it.

04 WHAT IT MEANS FOR AN AUSTRALIAN PLANT.

4.1 WHEN A SMALL FIRE IS A NOTIFIABLE INCIDENT

In Queensland, a notifiable incident includes a dangerous incident (Work Health and Safety Act 2011 (Qld) s 35(c)). A dangerous incident is one that exposes a worker or any other person to a serious risk to health or safety from immediate or imminent exposure to, among other things, an uncontrolled escape of a substance, an uncontrolled implosion, explosion or fire, or an uncontrolled escape of gas (s 37(a)–(c)).

The business must make sure the regulator is notified immediately after it becomes aware of the incident, by the fastest possible means (s 38(1), (2)), and keep a record of it for at least five years (s 38(7)). The person with management or control of the workplace must make sure, so far as is reasonably practicable, that the site is not disturbed until an inspector arrives or directs otherwise (s 39(1)).

Victoria's Occupational Health and Safety Act 2004 lists an implosion, explosion or fire among the exposures that make an incident notifiable, without the word uncontrolled (s 37(2)(b)). The employer must notify WorkSafe Victoria immediately after becoming aware of the incident (s 38(1)), give a written record within 48 hours (s 38(3)) and preserve the site (s 39(1)).

The test turns on who was exposed and how seriously, and the size of the fire is only part of that. A fire in process plant inside a hazardous area can meet it even when it is small and quickly out. This section states what the two Acts say and is not legal advice, and what US law required at Deer Park is outside this paper.

4.2 REVIEWING THE CONTROL BEFORE RESTART

Notification is the first record. The Work Health and Safety Regulation 2011 (Qld) then requires the control to be looked at again. A duty holder must review and, as necessary, revise a control measure that does not control the risk it was put in place to control, and the regulation's own example is a notifiable incident that occurs because of the risk (r 38(2)(a)).

A flammable vapour above 5 % of its lower explosive limit makes a hazardous atmosphere (r 51(2)(c)), and the risks of an ignition source in that atmosphere must be managed (r 52(1)). A fire in a hazardous area involves both. Table 4 sets out the questions that a review after a small fire can answer before the plant restarts, with where each is set out.

TABLE 4. QUESTIONS TO ANSWER BEFORE RESTARTING AFTER A SMALL FIRE IN A HAZARDOUS AREA

QUESTION	WHERE IT IS SET OUT	SECTION
Where did the flammable material come from, and has that source released before?	AS/NZS IEC 60079.10.1:2022 Cl 3.4.2 to 3.4.4 and Annex B.3	3.2
What ignited it, and was the ignition source inside a classified zone?	AS/NZS IEC 60079.10.1:2022 Cl 1. WHS Regulation 2011 (Qld) r 52	3.2, 4.2
Which safeguard was meant to prevent it, and what evidence shows it was working at the time?	AS/NZS IEC 60079.10.1:2022 Cl 4.3. NFPA 69:2024 7.7.2	3.3
Does the classification still describe the plant as it runs?	AS/NZS IEC 60079.10.1:2022 Cl 4.2 and 5.1	3.2
Was the regulator told?	WHS Act 2011 (Qld) ss 35, 37 and 38. OHS Act 2004 (Vic) ss 37 and 38	4.1
Who decided the plant could restart, and on what basis?	WHS Regulation 2011 (Qld) r 38(2)(a)	4.2

Sources: clauses and sections as shown.

The answers belong in the incident record, and the record belongs with the classification. A classification review is a good time to read the incident and near-miss records for each classified area, because a release that has already happened is better evidence of how often it happens than an estimate made at the design stage.

05 CONCLUSIONS.

At Deer Park, the same treatment process caught fire twice in a week, and the fire marshal's office learnt of both fires only after a third ignition, inside the vessel, caused an explosion. The ignition source, the state of the nitrogen system and what was done after the earlier fires are still open.

The confirmed facts already show the pattern. A small fire in a hazardous area is evidence that a flammable atmosphere and an ignition source have met, and the size of the next event depends on where the vapour is when they meet again. Recording and investigating the small fire is how a plant finds the cause while the event is still small.

ACKNOWLEDGEMENT

We acknowledge the supervisor who was taken to hospital, the facility's staff, and the fire services and hazardous materials crews who responded. The facts in Sections 2 and 3 are from the fire marshal's office, the company, the county and the City of Deer Park, as reported by the news organisations listed up to 23 November 2026. The investigation is open, and its formal report may change them.

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