



SHOULD YOU TAKE YOUR DIESEL FORKLIFT INSIDE?

BACKGROUND

Remember when you got that new puppy and had a debate with your wife as to whether the dog should be “an inside pet or an outside pet”!

We are aware of a number of warehouse sites, in particular in remote areas in the mining sector, where diesel forklifts are “inside pets”.

Diesel forklifts have a number of obvious operational advantages, for instance - fuel is typically readily available on site; diesel is often lower cost (especially on remote mine sites) than other fuel types; more torque; quick re-fuelling; and typically lower initial capex cost.

Our firm recently was recently commissioned by a client to provide specialist Logistics subject matter expert design input for a new 12,000m² warehouse on a mining site. Our design focussed on such things as – fitout & layout; storage equipment; material flow; traffic management; and materials handling equipment (MHE) specification.

As part of the consideration of MHE to be used, we conducted desk-top research into the potential health risks from diesel exhaust, in the context of forklifts being operated inside the warehouse. These notes are intended to share the findings from that research.

AUSTRALIAN STANDARDS

We could not identify any relevant Australian Standard which specifically restricts the use of diesel forklifts indoors.

WHAT IS IN DIESEL EXHAUST?

The main chemical components of diesel exhaust emissions are:

- Gases and vapours – which includes hazardous chemicals like nitrous oxide, nitrogen dioxide, sulphur dioxide and carbon monoxide.
- Fine particles known as diesel particulate matter (DPM) including fine carbon particles – hazardous chemicals known as poly aromatic hydrocarbons (PAHs) adhere to the surface of carbon particles. DPM can act like a gas and stay airborne for long periods of time. DPM can penetrate deep into the lungs because of its small size.

WHAT ARE THE POTENTIAL HEALTH IMPACTS?

Exposure to diesel exhaust can cause both short-term (acute) and long term (chronic) health effects.

- Short-term (Acute) effects

Short term exposure to high concentrations of diesel exhaust can irritate the eyes, nose, throat and lungs and cause light-headedness, coughing, phlegm and nausea. Very high levels of diesel exhaust exposure can lead to asphyxiation from carbon monoxide poisoning.

- Long-term (Chronic) effects

Long term exposure can worsen asthma and allergies and increase the risk of heart and lung disease.

Diesel engine exhaust emissions contain many known carcinogenic substances, for example PAHs adhere to the surface of the DPM. DPM is easily inhaled into the respiratory tract and there is epidemiological evidence which indicates ongoing exposure to diesel exhaust emissions may result in an increase in the risk of lung cancer.

DIESEL FORKLIFTS ARE BEST SUITED TO OUTDOORS APPLICATIONS

Consider the following extracts from a sample of forklift suppliers' web sites.

SOURCE – BENDIGO MITCHELL FORKLIFT HIRE SALES & SERVICE:

Diesel powered fork lift trucks are ideal for applications where they are mainly used outside. The exhaust fumes and diesel particulates escape easily to atmosphere and do not cause environmental or health and safety issues which would occur indoors.

SOURCE – CATERPILLAR:

Diesel forklift trucks are one of the toughest workhorses in the materials handling world, being suited to a wide range of unit loads and designed to withstand the rigours of outdoor work.

SOURCE – ADAPTALIFT (HYSTER):

It's recommended that you get a diesel forklift when being used for heavy lifting or outdoors.

Can only be used in open spaces or well ventilated areas.

SOURCE – FORKLIFT AMERICA:

It's important to know that all diesel forklifts operate with internal combustion engines and aren't safe to use inside warehouses where air tends to remain stagnant.

With affordable long-term operating and fuel costs, diesel forklifts are an attractive option for outdoor jobs. Diesel forklifts are for outdoor jobs whether your business is located in a region that experiences harsh winters or hot and humid summers. With so many advantages, it's easy to see business owners are choosing diesel forklifts for their outdoor work.

POSSIBLE MITIGATION STRATEGIES

If diesel forklifts are used inside, possible mitigation strategies appear to be:

- Ventilation of the warehouse
- Protect operators by fitting fully sealed and air conditioned cabins – although rarely practical operationally due to frequent need to hop on / off
- Operators to wear respiratory protective equipment (RPE) – not considered practical operationally, and guidance documents state should only be used as a last resort

SUMMARY

Diesel forklifts are best suited for outdoor applications.

Decision-making regarding the use of diesel forklifts inside a warehouse should consider the potential health impacts of diesel exhaust emissions.

If diesel forklifts are used indoors, mitigation strategies should be considered, in particular adequately specified mechanical ventilation.

FOOTNOTE

Our firm, Supply Chain Services Australia, provides consultancy services in the specialised discipline of supply chain & logistics.

A key reference document for the above comments was a publication prepared by Safe Work Australia, entitled *Guide to Managing Risks of Exposure to Diesel*.

