

# Why wood pallets shouldn't be used for transporting ULABs



A truck with no side gates delivering batteries, which has not been wrapped and strapped, to a scrap metal dealer. It wouldn't be a very good outcome if this vehicle was involved in an accident.

By David Bush

THE WOOD pallet is currently the default device used for transporting used lead acid batteries (ULABs) in Australia. It has become the de-facto standard for several reasons, including its low-cost and widespread availability, which also combine to eliminate the need to return the pallets to the consignor. Wood pallets are also the stated preference of Australian battery recycling facilities.

However, the wood pallet has several significant drawbacks when used for transporting ULABs. The economic advantage of one-way transport, compared to using returnable plastic containers, disappears upon closer

inspection. So, what are the concerns with using wood pallets?

## Health and environmental threat of toxic lead

Wood pallets are inadequate for capturing acid leaks during ULAB transportation and storage due to the battery acid containing high levels of lead and other toxic heavy metals, it creates a threat to human health and the environment. The World Health Organisation (WHO) has identified lead as one of 10 chemicals of major public health concern and currently suggests there are no known levels of lead exposure that are considered safe. In fact, the Basel Convention's *Technical guidelines for the environmentally*

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*sound management of waste lead-acid batteries* states that the sulfuric acid electrolyte contains high lead levels, as soluble ions and particulate forms. It also states that ULABs must be transported inside sealed containers due to the risk of leakage.

Many West Australians may recall the lead poisoning incident that occurred in 2006, when lead dust escaped into the environment during transport of ore from a Wiluna mine to Esperance port. The result was one

of the state's worst environmental disasters, with thousands of birds dying, 33 people testing for unsafe blood lead levels, and the resulting five-year clean-up costing the state government in-excess of \$25 million.

While the health risks from transporting lead acid batteries (LABs) are probably not comparable, as lead dissolved in acid could be a problem due to skin absorption of the lead from touching contaminated pallets and batteries. This risk was

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highlighted in 2016, when one of Australia's largest pallet hire companies discontinued supply of wood pallets to a battery recycler in Wagga Wagga, NSW, following their operational employees' blood testing for elevated lead levels. This case reinforces that people working in lead industries have a potential chronic exposure problem and need to be monitored for lead blood levels, and that the use of wood pallets can only serve to increase this risk.

### Safety threat to the Australian public and industry workers

The second major concern with the use of wood pallets is the safety and environmental risks posed to the Australian public due to the systemic non-compliant packaging and transportation of batteries. To understand why wood pallets are contributing to non-compliance, it is important to examine the packaging and transport requirements in the Australian Code for Transportation of Dangerous Goods (ADGC).

For LABs, the packaging requirement are outlined in the ADGC P801 Packing Instruction. For wood pallets, LAB layers need to be separated by a non-conductive layer of sufficient thickness (30mm). The batteries should then be wrapped in plastic, then secured horizontally and vertically by plastic strapping, followed by the appropriate dangerous goods labels being applied.

That is a lot of work and it is neither an easy, nor safe, task trying to stack batteries of all different sizes on top of each other. This, combined with variations in worker's attitudes and training, non-availability of the required materials and tools (e.g. heavy-duty wood pallets, plastic wrap and straps, strapping tool and 30mm non-conductive separators), and the economic cost of performing this task, can lead to shortcuts being taken.

The only time the industry appears to make a modest attempt to transport ULABs in a compliant manner is when they are shipping the batteries interstate to battery recyclers. However, I use the word "modest" deliberately, as the majority are shipped with inadequate or no separators. Unfortunately, most batteries have

already been transported several times before the final leg of their journey and the level of regulation compliance for intra-state transport is virtually non-existent. I would estimate that in-excess of 95 per cent of batteries are being transported non-compliantly and this can be verified by observing deliveries being made to the battery aggregators in each state.

Incorrect application of metal strapping is reportedly the most common cause of fires when transporting ULABs. Consignors should use high-strength plastic strapping; however, metal straps are often used because of the unavailability of plastic strapping.

In November 2017, a 4WD vehicle that was carrying a load of unrestrained used car batteries in Albany, WA, crashed and killed the two occupants. In the accident, car batteries were strewn around the crash site. Whether the batteries contributed to the severity of the accident is unknown, but it is assumed that they could have.

The systemic non-compliance of the packaging and transport requirements is increasing the risks to industry workers, the Australian public and the environment in the event of an accident. I believe it is not a question of if, but rather when, a load of poorly packaged and inadequately restrained batteries will contribute to a road fatality.

### The regulator's role

Contributing to the widespread and systemic non-compliance by the battery recycling industry is a lack of policing by the governmental departments responsible for their enforcement.

On one hand, I have some empathy for the responsible departments, who are often under resourced and need to prioritise the use of their resources to inspect and prosecute breaches for dangerous goods, which pose a higher threat to the public and the environment than batteries do.

That said, with approximately 135,000 tonnes per year of ULABs being transported on wood pallets from all over Australia to NSW for recycling, I believe the risks are not insignificant. Hence, if little policing

is going to be undertaken and there is widespread non-compliance, then why bother with any regulations?

I would challenge that with smart deployment of officers, effective and leveraged results can be achieved. Every state has several large aggregators of ULABs, and these companies receive batteries daily from deliveries made to their yard and from their own collection efforts. An officer parked at the front would quickly observe the high level of non-compliance that is occurring.

Furthermore, if there are no prosecutions being made, then the current behaviours and contempt displayed by the industry will continue. For the three states I checked – NSW, Victoria and WA – I was able to find only one instance in the last six years of a company being prosecuted for non-compliant transportation of ULABs. If more have occurred, then they need to be easier to find and more visible.

### What needs to happen?

With the increased availability of plastic boxes with suitable strength and capability of retaining acid leaks, Battery Rescue believe it is time the industry moved away from the use of wood pallets for storage and transportation of ULABs. The use of plastic boxes would immediately improve the level of compliance by the industry and reduce the risks to the public and the environment.

Plastic boxes and bins are the main method used in Europe to transport ULABs for recycling. Yes, they have an advantage in that the transport distances are much smaller than in Australia, but maybe, it is because they are more environmentally conscientious than we are. After all, their dry-cell battery recycling rates are approximately 50 times what they are in Australia.

Kevin Jones, director of Fleetrak Consulting, demonstrated that despite the additional costs of washing and returning the containers within Australia, on average there is a saving of \$21 per tonne of batteries transported using plastic containers versus wood pallets.

The savings are due to the time and materials involved in preparing the batteries for transport on wood pallets and the efficiency gains of automatic unloading from plastic boxes. In other words, there is no cost to change to a closed container pool system, for the majority of ULABs collected within Australia, with the exception of the most remote locations.

Experts are constantly telling us we are living in a rapidly changing world, which may be true in some

respects. But paradoxically, humans can be slow and resistant to change existing ways of doing things. Consider the story of Malcom McLean, the American businessman who developed and patented the modern intermodal shipping container, which has revolutionised transport and international trade. Despite the obvious efficiency gains of containerised transport, he encountered fierce resistance from the transport industry, and it took many years before the concept became established.

Recognising this human tendency, it will take action on several levels to overcome this inertia. Here's what I believe needs to happen to bring about the changes required:

- Revise current ADGC Packing Instructions for LABs, so that requirements are clearer and less ambiguous.
- Used battery generators need to support battery collection services that use a plastic box or container. If your current collector is transporting your batteries on wood pallets, then this is probably not complying with current regulations, is unsafe and is damaging the environment. The amount you can get paid for your batteries in return for this trade-off should not be your primary consideration.
- Government regulators need to regulate – starting with a campaign targeting the large battery aggregators and resulting in several high-profile prosecutions.
- Like the Europeans, Australian battery recyclers need to install the necessary equipment to enable automatic unloading of batteries from plastic containers.
- The use of wood pallets should be eliminated as an option for transporting ULABs. Unless the industry can demonstrate a high level of compliance, it should be given a couple of years to transition away from wood pallets to a plastic container solution.

It is only with this sort of combined action that enough momentum will be achieved to overcome the inertia that exists in the industry, while bringing about a safer and more environmentally sustainable Australian ULAB recycling industry.

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