Prosecution Summary of Conviction

Alcoa of Australia Ltd (ACN:004 879 298)

LEGISLATION:		*Work Health and Safety Act 2020*				
Charge	**Charge Number**	**Sentenced Date**	**Regulation**	**Section**	**Penalty**	**Offence Date**
1	**RO7244/2024**	**25/03/2025**		**19(1) 32(1)**	**$400,000**	**16/09/2022**

BREACH(ES)

Being a person conducting a business or undertaking, did not, so far as was reasonably practicable, ensure the health and safety of workers while the workers were at work in the business or undertaking, and by that contravention exposed workers to serious harm, contrary to sections 19(1) and 32(1) of the Work Health and Safety Act 2020.

DETAILS

On 16 September 2022 workers at Kwinana Alumina Refinery (Refinery), including school students on a work experience placement, were exposed to an uncontrolled release of caustic liquid from a discharge drainpipe during an emergency pump change. As a result, some of the workers were contacted by caustic liquid and received caustic burns.

Background
Alcoa operates the Refinery, which was commissioned in 1963. It is one of three alumina refineries operated by Alcoa in Western Australia and it produces approximately 2.2million metric tons of aluminium annually.

The Refinery receives bauxite from Alcoa's Huntly Bauxite Mine and produces alumina using the Bayer process. This process involves four main steps: digestion, clarification, precipitation, and calcination. Calcination involves heating alumina hydrate crystals to approximately 1000 degrees Celsius to remove water and other substances that may be chemically bonded to the alumina. Calcination is carried out at the Refinery in a building designated as Building 50 within Operational Centre 4.

The calcination process at the Refinery involved the use of a Dorrco Filtrate System, the pumps for which were located on the ground floor of Building 50. The Dorrco Filtrate System was comprised of tanks, pumps, pressure control valves, injection supply valves and a caustic washing injection supply.

At the time of the incident, there were two main tanks with associated plant, which were referred to as 50G2 and 50G3. Each of the tanks had two Warman Slurry Pumps attached. The two pumps connected to the 50G2 tank were referred to as Number 4 Dorrco pump and Number 5 Dorrco pump. The pumps could be interchanged. Changing the pumps was a routine task that usually occurred every 24 hours on the nightshift. The task was usually completed by a single operator, who would be communicating with the control room attendants.

Each of the pumps had a discharge drain valve that drained to a common discharge drainpipe. The discharge drainpipe for the pumps flowed into an open spoon drain which ran along a thoroughfare within Building 50. This created a risk of workers coming into contact with caustic liquid from the discharge drainpipe if the correct procedure for changing over the pumps was not followed.

As at 16 September 2022, Alcoa had two procedures in place for the task of changing over the pumps, being the Start Warman Slurry Pump (REF) procedure and the Stop Warman Slurry Pump (REF) procedure.

The incident
On 16 September 2022, a contract labour hire worker, was working in Building 50 carrying out general cleaning and housekeeping duties when he noticed a burning smell. He looked for the cause of the smell and found that Number 4 Dorrco pump was emitting smoke and debris. He informed the shift supervisor of the situation by a mobile telephone call. After being informed of the situation, the shift supervisor inspected the pump and found it smoking, glowing, and spitting embers. He told the worker to move back out of the way and then called up the control room to check that Number 5 Dorrco pump could be brought online to replace the pump that was smoking and spitting embers.

The control room operator advised the supervisor that the pump change would need to be completed within a small timeframe due to potential production consequences. The control room operator and the shift supervisor were both aware of the possibility that the pump could have exploded if pressure had built up.

Two other Alcoa employees, (**employee 1 and 2**) had followed the shift supervisor to the work area. The shift supervisor told employee 2 to move aside to where the labour hire worker was standing. Employee 1 and the shift supervisor proceeded to take steps to change over the pumps. The shift supervisor opened the valve for packing water (this allows in water to assist the functioning of the pump) and then opened the discharge drain valve.

During the process of the pump change, the Work Experience Supervisor and work experience students from Gilmore College walked towards the work area. The shift supervisor left the discharge drain valve that he had just opened and went over to the group and told them to leave the area. As he did so, employee 1 continued with the sequence for opening the pump. The group began to leave the area.

Employee 1 was unaware that the discharge drain valve was still open and pressed the start button for the pump. This caused an uncontrolled discharge of hot caustic liquid to be released from the discharge drainpipe under pressure. The caustic liquid made contact with a metal step in the open spoon drain which caused the liquid to spray out and contact some of the workers.

The shift supervisor crossed over the spoon drain to close the discharge drain valve to prevent any further release of caustic liquid and continued with the pump change process.

Employee 2 left Building 50 to make her way to female change rooms to shower. She applied Diphoterine (DAP) as she walked to the changerooms.

Employee 1 saw the incident and went over to assist. He guided some students to a safety shower on the north side of the spoon drain and instructed them to take off their clothes and get under the safety shower to rinse the caustic liquid off their skin.

After completing the emergency pump change, the shift supervisor called an emergency response officer and requested emergency assistance. Emergency response officers attended and rendered first aid to the affected workers. They applied DAP to the exposed workers before transporting them to the medical centre. At the medical centre the workers continued rinsing the affected skin under showers and applied additional DAP.

OUTCOME	Pleaded guilty – convicted and fined
FINE	$400,000
COSTS	$5536.70
COURT	Magistrates Court of Western Australia – Rockingham