



MAGISTRATES COURT *of* TASMANIA



CORONIAL DIVISION

RECORD OF INVESTIGATION INTO DEATH

Coroners Act 1995

Coroners Regulations 1996

Regulation 14

Form 4

I, **Stephen Raymond Carey**, Coroner, having investigated the deaths of

Adrian David CHUGG

and

Bruce Anthony BEAMISH

AFTER HOLDING AN INQUEST

FIND THAT :

Adrian David Chugg died on 7 December 2005 at an industrial site at 23 Murphy Street, Invermay in Launceston.

I further find that Bruce Anthony Beamish also died on 7 December 2005 at the same place.

Adrian David Chugg was born on 9 April 1965, was aged 40 years at the time of his death. Mr Chugg conducted business in the name of Boiler Services Tasmania.

I find that Mr Chugg died as a result of multiple injuries to the head and body caused by blunt force trauma caused as a result of severe explosive impact to the body or a combination of an explosive impact to the head and impact of the torso with the ground.

Bruce Anthony Beamish was born on 23 February 1971, was aged 34 years at the time of his death and was self employed as a boiler maker/welder.

I find that Mr Beamish died of multiple injuries to the head and body caused by blunt force trauma caused by either a severe explosive impact to the body or impact between the body and the ground or a combination of both.

At the time of the deaths of Mr Chugg and Mr Beamish neither were being treated by a medical practitioner.

CIRCUMSTANCES SURROUNDING THE DEATH :

On 7 December 2005, Veolia Environmental Services (Australia) Pty Ltd ("Veolia") operated an establishment at 23 Murphy Street, Invermay at Launceston. That Company had acquired the site in 1998 from an organisation known as Pacific Waste Management. At that time there was

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operating at the Murphy Street site an oil recycling plant which Veolia continued to operate. Veolia also conducted other operations at that site. In summary, the oil recycling operation involved the collection by Veolia of waste oil from various sources which included ships, industrial plants and service stations in Northern Tasmania. This oil was transported to the Murphy Street site where it was transferred into storage tanks. At an appropriate time the stored oil was then heated in the tanks to a temperature of 85° Celsius for the purpose of de-emulsifying the oil, that is, separating the liquid into oil and water. The water was then drawn off and the remaining oil that was recovered from this process was sold by Veolia to other customers. The oil recycling operation involved at various times and for various purposes five steel tanks, appropriately numbered 1 through to 5. At some time in the past tanks 4 and 5 had been fitted with electronic level sensors which allowed a remote reading of the level of liquid in the tank to which the sensor was fitted. This device replaced the previous method whereby the level of oil in the tank was measured by dropping a rope knotted at set intervals from the top of the tank until it encountered the top of the oil, thereby permitting the volume of oil to be determined. Prior to 7 December 2005 capital expenditure had been approved by the Tasmanian office of Veolia for the installation of an electronic level sensor on tank 1, this tank had not been used for the heating of oil for some time. The expenditure was approved on the basis of a quotation submitted by Mr Chugg to supply and fit that sensor. Mr Chugg had performed the sensor fitting work on tanks 4 and 5. Mr Chugg operated the business known as Boiler Services Tasmania and performed work from time to time for Veolia at its Murphy Street site. On 7 December 2005 Mr Chugg attended the Murphy Street site and was later joined by Mr Bruce Beamish who operated his own business, Precision Welding Services. Apparently Mr Chugg had arranged the attendance of Mr Beamish to assist him in the work he intended to perform on that day.

Mr Chugg and Mr Beamish ascended to the top of tank 1 and at some stage carried to the top of that tank a portable welding apparatus, an electric hand held metal grinder, a drill and the electronic level sensor which they obviously intended to fit.

As part of the installation process a hand held grinder was used to grind away paint from the top of the tank where it was intended for a metal socket to be welded. The intention being that the electronic sensor would then be screwed into the socket once it was fitted to the top of the tank. Having exposed the bare metal a hole has then been cut into the top of the tank with a hole saw. Given their relative expertise I infer that Mr Beamish has then commenced to weld the socket onto the hole that has been created and during this process sparks or heat being generated has ignited vapour that existed between the top of the liquid in tank 1 and the top of the tank. This ignition has caused an explosion of significant force, so much so that the top of the tank has separated and both Mr Chugg and Mr Beamish were thrown from the top of the tank and fallen to the concrete base some 10 metres below the top of the tank.

At the time at which this work was being performed tank 1 contained approximately 72,000 litres of waste oil/water. Daily records indicate that the tank contained waste from marine vessels, garage waste and solvents, the proportion of which would be unknown, because water is drained from the tank as it separates (via gravity or chemically assisted) and materials transferred between tanks, and when this occurs the volumes of any transfers are not recorded. The oil in tank 1 was being heated at the time at which this work was performed, the temperature being recorded at 75° Celsius at 8am on that day and I infer that by the time at which the work was being performed the temperature of the oil in the tank was not less than that temperature and would have been approaching the required operating temperature of 85° Celsius.

I am satisfied that the arc struck by the welding rod on the socket being secured to the top of the tank was the source of the ignition that resulted in the explosion in the vapour space in the tank. I am also satisfied that a flammable environment had been created in the vapour space during the

heating of the petrochemicals in tank 1. In this regard heating the petrochemicals would have increased the amount of vapour in the clear space above the liquid and consequently increased the amount of fuel in the explosion and the extent of the explosion. When the top of the tank was opened by the drilling of the hole, this resulted in air being drawn into the area below the hole and significantly increased the oxygen concentration directly below the area being welded. The mixture of flammable vapour and oxygen from the inflow of air would eventually have created an explosive capability of the vapour then present. Both Mr Chugg and Mr Beamish were exposed to the initial explosive effect and were then thrown into the air by such explosion landing on the cement surface some 10 metres below the site on which they were performing their work. As stated previously, the injuries received by both are consistent with the effects of the blunt trauma from both the explosive impact and/or the fall from a height.

COMMENTS AND RECOMMENDATIONS:

Knowing now the circumstances of how the accident happened as set out above the actions being performed by Mr Chugg and Mr Beamish were clearly very dangerous and it was perhaps inevitable that what happened would happen. The critical matter however is that I do not believe that they nor responsible persons at Veolia in fact knew these critical circumstances existed at the time. However they were circumstances that, with appropriate and reasonable steps being taken by all concerned, could have been identified and this tragic accident could have been avoided.

It was clear upon the evidence that Veolia, despite developing Occupational Health & Safety procedures, site management and contractor management processes, had either not formally implemented these or had not ensured that they had been “rolled out” and applied at various work places. The impression that I was left with was that more attention was being given to developing formal documents rather than action being taken on the ground to ensure that risks were identified and action taken to address those risks. This was so especially in relation to work performed by contractors on behalf of Veolia. The fundamental omission by both Veolia and its staff as well as Mr Chugg and Mr Beamish was to conduct a risk assessment of the task allocated and the starting point for all was to identify the possible risks or hazards that might have been encountered or created by the proposed work. There were corporate processes in place or being developed such as the contractor management procedures, work permit and hot work permit procedures, that should have directed relevant staff to ensure that specific rather than generic risk assessments were conducted.

Significant gaps existed between the developed procedures and processes by Veolia and the implementation of those in their intended form at the work place. Additionally significant gaps were identified in the knowledge and training of responsible people within Veolia as to the purpose and intent of these procedures, for example, the Permit to Work requirement. A Permit to Work was issued to Mr Chugg by the site supervisor Mr Shane Smedley, but it was for a period of 12 months to conduct boiler maintenance. This apparently was thought to cover all work done by Mr Chugg throughout the 12 month period. Such a belief totally misses the point and is inconsistent with the Company’s formal document relating to the issuing of a permit to work. It was clearly intended to be task specific as the preamble states:

“Providing a permit to work confirms that the task in question has a risk assessment and that the safety precautions to reduce harm to persons, disruption to services, damage to plant/equipment has been clearly identified by Collex (Veolia)”.

The preamble also requires that the person authorised to issue such a permit (Mr Shane Smedley) is responsible to:

“...ensure all hazards associated with the proposed job have been identified, assessed and controlled.”

A permit to work applicable for 12 months with a generic job description and no risk assessment clearly does not fulfil the intent of this procedure. Not only did the person issuing the permit not understand the intent, but there apparently was no audit by higher management to ensure that this procedure was being properly implemented.

In this case the volatility of the liquid in tank 1 was dismissed as low risk without any formal assessment. My understanding was that this assessment was based upon an historical understanding passed on from the previous operator to Veolia and accepted by all those involved in the process. That may or may not have been the case if solely heavy bunker style oil was being processed. Veolia however had no process or system to ensure volatile components were not being added by the people and organisation from whom waste oil was being collected. There was some suggestion of occasional flash testing of the product which appeared to reinforce its high flash point. Reliance upon customer declarations for oil quality assurance without testing or staff training as to maintaining quality assurance to minimise the introduction of hazards was clearly inadequate. The understanding of key personnel of Veolia and in particular those involved at the site was that the oil being treated was flammable only with “extreme provocation”. If this was the knowledge of the key personnel having the control and conduct of the waste oil process I have no doubt that this was the information that would have been passed to contractors and other persons attending at the site. The process being conducted by Mr Chugg and Mr Beamish was undertaken on a false premise, that is, that the oil in tank 1 had a high flash point and was not volatile. Given this was the belief of Veolia management and the site manager, Mr Smedley, I have no doubt this understanding was conveyed to Mr Chugg and Mr Beamish. As I understand the evidence Mr Chugg had been performing work at this site for many years relating to boiler management and the oil recycling process. He had fitted electronic level sensors on two other tanks previously, although apparently they had had mounting sockets already fitted to the top of the tanks when they were manufactured. It is clear that Veolia had never carried out a formal assessment as to the risks created should volatile products or other contaminants be introduced to the waste oil. Such an assessment would hopefully have led to a system that ensured the quality of the waste oil being introduced to the process was as expected and contained no contaminants. Had this been done the waste product being heated in tank 1 may well have had the high flash point expected and may not have produced the volatile vapours that when mixed with oxygen became explosive in nature.

I do not consider that Veolia had taken the necessary reasonable steps to ensure the safe quality of the waste oil it introduced into the processing plant. Mr John Brennan, Manager Environmental Services for Veolia describes at para 24 of his affidavit that:

“In general waste oil is regarded as combustible unless we are otherwise told by a generator that they have actually tipped solvents, flammables and chemicals and things in there too that could react. The onus is on the generator.”

The emphasis appeared to be in regard to environmental issues as Mr Ronald Ward, Group General Manager, Tasmania in his affidavit states at para 43:

“The waste oil declaration form was primarily for an environmental purpose with respect to its intent. With the benefit of hindsight maybe it should have gone past that, but at that time the driver for the content of the form was to ensure that we were meeting our obligations under the environmental legislation.”

An appropriate risk assessment would in my view have highlighted the prospect that the waste oil could on occasion be contaminated. It would be reasonable in those circumstances to either set up a testing regime that identified contaminated waste before it was unloaded into the processing plant, and/or ensure that the waste oil process was conducted and all activities in proximity to the plant were conducted in such a way as to negate the prospect of an incident caused by any introduced volatile substance. These are basic risk management practices that ought to have been implemented by Veolia with or without the creation of a formal documented safety procedure that I understand was being “rolled out”.

The apparent lack of knowledge by Veolia and key personnel involved in the waste oil plant process was not based upon any reasonable premise, but was apparently accepted due to historical practice. There were warnings raised which were either dismissed or not given the weight that they deserved. In particular I accept that:

- Passing comment of concern was made to a company representative by Mr T Cummings, Senior Environmental Officer, Department of Primary Industries, Parks, Water and Environment, when he noted that welding work was apparently being conducted near open tanks containing waste oil on a visit he made to the site in February 2005.
- Issues concerning the safety of the oil plant had been raised at the management level by Mr Robert Wise, Business Standards and Development Officer, Veolia, whose duties for Veolia involved a particular emphasis on safety. I accept that he did on a number of occasions raise with senior management personnel within Veolia, Tasmania his concerns as to the process being conducted at the oil plant including –
 - boiler operation and safety
 - possibility of flammable contaminants in the oil and not sufficient risk assessments on work processes within the oil plant.
- Mr Robert Wise whose role was to address safety issues for his employer was concerned about the complacency in relation to the oil plant and the lack of independent assessment of risks. Apparently his concerns were raised at the management level and were to be addressed as part of the proposed future major upgrade of the plant.

In regard to this complacency Mr Brennan says at para 57 of his affidavit:

“I don’t recall a formal study being done on that plant to determine where Collex (Veolia) should be controlling ignition sources within the plant.”

Additionally Mr Ward says at para 39 of his affidavit:

“To the best of my knowledge a risk assessment had not been conducted on the plant with respect to heating of waste oil prior to the incident. I don’t know what the working temperature of the boilers was, nor can I explain the purpose of the valve that was at the top of the heat exchanger. We don’t appear to have that knowledge in house.”

That said, one must question why two experienced tradesmen conducted a metal cutting and welding task on the tank of heated oil without taking more steps than they apparently did to ensure the task could be conducted safely. However any assessment that they may have done would have been based upon an assumption provided to them by Veolia that the heated oil had a high flash point and was not flammable. I have no doubt that this general understanding was conveyed to Mr Chugg and Mr Beamish, as such understanding was consistent with the state of mind of key management personnel of Veolia and in particular Mr Smedley, the site supervisor. Whether Mr Chugg or Mr Beamish ought to have conducted their own assessment as to the

nature of the oil product being heated and in particular whether volatile vapour existed in the tank is a point of debate. I am satisfied on the evidence that the Company was aware, having granted the appropriate contract to Mr Chugg that he would at some stage perform work to fit the electronic level sensor to tank 1. I am satisfied on the evidence that on 7 December 2005 Mr Smedley knew or ought to have realised given the conversation with Mr Chugg and what was happening at the site that the level sensor was going to be fitted on that day. The Company had conducted no risk assessment in relation to this contracted work and no specific consideration was given prior to or on 7 December 2005 to risks or hazards that were known or ought to have been known to the occupier and operator of the process that might need to be considered by the contractor. It is a reasonable inference that Veolia were aware that the contractor would rely upon his belief consistent with the Company's belief that the waste oil was inert with a high flash point and would only ignite under "extreme provocation". Given the knowledge that this fact was or could be relied upon the contractor in formulating how he was to conduct his work, there was a clear obligation upon the occupier and operator of the plant to ensure that this critical information was correct.

This obligation was set out in Veolia's own procedural documentation. As stated previously, a task specific permit to work ought to have been issued and prior to that a risk assessment in relation to the proposed job had to be completed by Veolia. The purchase requisition as part of the tender and contract for the work to be conducted by Mr Chugg also required that a risk assessment be performed. The proposed work required a hot work permit and before the issue of such a permit the appropriate process provided for a detailed risk assessment to be conducted by Veolia's authorised officer and the contractor. None of these were conducted.

Although Veolia and key personnel, including the plant supervisor, were entitled to rely upon the skill and knowledge of Mr Chugg and Mr Beamish in the performance of their work, Mr Chugg and Mr Beamish were entitled to be warned of any hazards they needed to take into account in performing their work, especially hidden hazards. I have no doubt that had Mr Chugg and Mr Beamish been advised of the possibility of volatile vapour in tank 1 that given Industry practice, their own training and experience and even the application of common sense, that they would not have approached this work on 7 December 2005 in the manner that they did.

It follows therefore that employers, contractors, occupiers and any other person or corporation who have a common law or statutory duty to take all reasonable steps to ensure the safety of others must as a start point of any occupational health & safety plan or risk management plan conduct a thorough analysis of the relevant location and process being conducted or to be conducted at that location and identify all credible risks or threats to safety and from that develop plans to mitigate those risks and threats. Safety and risk management is not merely a matter of developing formal documentation and formal procedures, it is the application of appropriate processes influencing the manner in which work and activity is conducted that will ensure the safety of those involved. I recommend that Workplace Standards Tasmania take appropriate steps to ensure that those responsible for occupational health and safety issues at a work site are aware that their obligations do not end with the development of formal written procedures or structured processes, but rather their obligation continues in ensuring that those processes and procedures are in fact implemented at the work place and there are audit steps taken to ensure ongoing compliance and application. Workplace Standards Tasmania must also ensure that where an obligation is imposed in respect of a number of different classes of persons, for example employees, contractors and visitors, it is made clear that this obligation co-exists and that it is not acceptable that the person or corporation charged with that obligation determine to fulfil its obligation to one class, taking no or minimal steps in relation to the other classes to which it has an obligation.

Veolia had made a conscious decision to concentrate its occupational health and safety endeavours upon its own work force and action in regard to its obligation to sub-contractors was still under development.

The danger of concentrating upon development of over arching policy and procedure and not ensuring what is occurring at the workplace is starkly illustrated in the evidence of Mr Smedley and the resultant link between his performance of his duties and this tragic accident. In his affidavit he asserts:

- In paragraph 31,

“...As far as the supervision of the contractors on site is concerned I couldn’t determine whether I was responsible for the supervision of contractors due to not being totally familiar with my position description ...”

- In paragraph 38,

“I am unaware as to whether Collex (Veolia) had conducted a risk assessment on the handling of heated waste oils at the oil plant. Also there was no risk assessment conducted with respect to the installation of any of the level sensors in the oil plant.”

- In paragraph 91,

“With respect to the document entitled ‘Collex Hazard Identification, Assessment and Control of Risk’, I don’t recall having seen that document up to the time of the accident.”

- In paragraph 95,

“With respect to the document entitled ‘Collex Contractor Permit to Work’ that was issued to Adrian Chugg on 9 August 2005, I was led to believe that the permit would cover for a 12 months period with respect to all tasks that he would perform. I didn’t receive any training on this permit to work process.”

- In paragraph 109,

“I have not received any training with respect to petro-chemicals, being petroleum-based chemicals at all. At the time of the accident nor had I received any training with respect to Collex (Veolia) hot work permit system. Similarly I have not received any training with respect to the Collex (Veolia) purchasing procedure at the time of the accident.”

A number of other issues were canvassed before me and although they indicated a failure of the site occupier and plant operator to adequately authorise, supervise and control the work being conducted, I do not consider that these failings in this case were causative of the accident. In particular, Veolia had an applicable procedure whereby in this case a hot work permit was and should have been issued in relation to the work being conducted by Mr Chugg and Mr Beamish. This was not done. Mr Smedley, the site manager, accepted however that if he had known what Mr Chugg and Mr Beamish were planning to do (he denied actual knowledge) he would have required a hot work permit to be issued, but given his knowledge of the plant he would not have had any concern or unease about the prospect of cutting into the tank or welding on the tank.

The issuing of a hot work permit, without supportive risk analysis would therefore have not altered the tragic outcome in this case.

Likewise some aspects required by AS 1940 such as the erection of signage relating to warning of combustible products and compliance with AS 2430, AS 1692 and AS 4041 were not met. Although these aspects are indicative of a failing by Veolia to meet its obligations in respect of the processing plant the primary causative factor for this tragic accident remains the overall lack of risk assessment and risk identification as outlined herein.

Before concluding this inquest I express my condolences to the families of both Mr Chugg and Mr Beamish.

DATED: Tuesday 20 October 2009 at Hobart in the State of Tasmania.

Stephen Raymond Carey
CORONER