

**IN THE DISTRICT COURT  
AT TAURANGA**

**CRI-2017-070-004684  
[2018] NZDC 13868**

**BAY OF PLENTY REGIONAL COUNCIL**  
Prosecutor

v

**BALLANCE AGRI-NUTRIENTS LIMITED**  
Defendant

Hearing: 14 May 2018  
Appearances: VC Brewer for the prosecutor  
J Campbell for the defendant  
Judgment: 10 July 2018

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**NOTES ON SENTENCING OF JUDGE KIRKPATRICK**

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**Introduction**

[1] The defendant, Ballance Agri-Nutrients Limited (**Ballance**), is charged in CRN 17070501702 that on 22 May 2017 it discharged a contaminant (namely sulphur dioxide and/or fluoride) from an industrial or trade premises into air, contrary to s 15(1)(c) and 338(1)(a) of the Resource Management Act 1991.

[2] The maximum penalty for such an offence under s 339 of the Act is a fine not exceeding \$600,000.

[3] Ballance pleads guilty to the charge. There is nothing before me to suggest that a discharge without conviction would be justified. Ballance is accordingly convicted and I now proceed to consider an appropriate sentence.

## Background

[4] The location of the offending is at a fertiliser manufacturing plant owned and operated by Ballance at 161 Hewletts Road, Mt Maunganui, in an industrial zone adjacent to the Port of Tauranga. To the south of the site is Whareroa marae, which includes a kainga of 15 houses and a Kohanga Reo. The fertiliser plant has been operating on this site since 1958. Its operations involve two principal processes in different areas of the site: the acid plant where sulphuric acid is manufactured and the manufacturing plant where super-phosphate fertiliser is produced. The two activities are related because sulphuric acid is a primary component in the manufacture of super-phosphate.

[5] Ballance holds resource consent 64800, granted by the Regional Council on 29 May 2008, which authorises the discharge of contaminants to air arising from the manufacture of sulphuric acid, manufacturing and processing of phosphatic fertilisers and associated processes at Ballance's fertiliser plant. Consent will expire on 31 July 2018. This consent replaced an earlier consent 03-0110 issued in 1997 to Ballance's predecessor, BOP Fertiliser Limited.

[6] Of particular note is condition 7.2 of consent 64800 which requires all off-gases from the acidulation process and all gases from hygiene extraction points, as described above, to be passed through the relevant scrubbers and a cyclone before being discharged to the atmosphere through the stack.

[7] As set out in the Summary of Facts, the relevant process in terms of this charge is known as acidulation, occurring in the manufacturing plant, which involves:

- (a) mixing finely ground phosphate rock with sulphuric acid, water and recycled scrubber liquor in a reaction vessel, involving temperatures around 110-130<sup>0</sup>C;
- (b) that mixture, in slurry form, is then dropped into a conveyor unit known as the acidulation den where it is cooled to 75-90<sup>0</sup>C and set into a solid form;

(c) the product is then conveyed to a granulator and then on to a storage facility.

[8] In the second part of the process, as the mixture is being conveyed through the acidulation den, the reactions also generate a number of gaseous contaminants including fluoride compounds (silicon tetrafluoride and hydrogen fluoride) and sulphur compounds (sulphur dioxide and hydrogen sulphide). The air from the acidulation den is accordingly extracted to tower scrubbers to remove these contaminants. There are also hygiene vents around the building to extract fugitive emissions from the process. The off-gases from the tower scrubber and the air from the hygiene vents are all then passed through a salt water scrubber before being discharged through a stack into the atmosphere.

[9] Sulphur dioxide can have adverse effects on the eyes, nose, throat and lungs. It is described in the Summary of Facts as an irritant, and chronic exposure can cause changes in lung function which can lead to increased illnesses and death. It is relevant to note that the charge relates to a single discharge event and so it is not alleged that chronic exposure resulted. The Summary of Facts does not describe the effect of hydrogen sulphide.

[10] Silicon tetrafluoride and hydrogen fluoride can also cause irritation to the eyes, nose and lungs. Chronic exposure can lead to skeletal fluorosis which, after prolonged occupation exposure, can lead to increased bone density, joint pain and limited joint movement. Again, there is no allegation of chronic exposure in this case.

[11] The manufacturing plant operates on two shifts, changing over at 6.00am and 6.00pm. On each shift there is a team leader who oversees an acidulation controller and a granulation controller. There is also a controller charged with collecting the phosphate rocks that are fed into the initial mixture. Two further employees work on each shift, mainly for cleaning duties. There is, therefore, a total complement of six people on each shift.

[12] The mixture is created in accordance with a recipe that Ballance's chemist provides to the acidulation controller. The acidulation controller then prepares the

mixture in accordance with the recipe and monitors its progress through the manufacturing plant to ensure that it turns out with the desired properties. In particular, the acidulation controller can adjust the speed of the conveyor through the acidulation den and can also stop the entire process at any time, using an emergency stop button. Relevant information, including any changes to the speed of the conveyor, is recorded in a written den-log by each acidulation controller. I was provided with copies of the den-log for the period between Friday 19 May 2017 and Tuesday 23 May 2017. A great deal of information is shown in those logs.

### **Circumstances of offending**

[13] Immediately prior to 22 May 2017 the conveyor in the acidulation den had been operating at a speed of between 300-350mm per minute. During the weekend of 20-21 May 2017 there were changes in the blend of material being processed, which resulted in a higher “cake” passing through the acidulation den and preventing the fumes in the den being extracted properly. This led to a build-up of fumes. The acidulation controller sought advice from Ballance’s chemist and then increased the conveyor speed from 300 to 400mm per minute. A few hours later the speed was further increased to 500mm per minute. This reduced the quantity of mixture being poured into any given stretch of the conveyor in the den and also reduced the time the product remained in the den from 33 minutes to 20 minutes, but it meant that the height of the “cake” was reduced so that the fumes could be extracted to the scrubbers. The den log for Sunday 21 May 2017 records stoppages of 45 minutes between 0734 and 0819 and then for 67 minutes between 1131 and 1238 because of “excessive fumes”. The log also records the increase of floor speed initially up to 400mm and then, at 1134, up to 500mm per minute because of excessive fumes. The Summary of Facts records that these changes in speed resolved the fume problem in the den.

[14] The same den log also records stoppages between 1842 and 2100 and again between 0315 and 0600 for “refill g/r”. This is a reference to the need to refill the ground rock hopper at the initial stage of the process.

[15] A routine change in shift occurred at 6.00am on Monday 22 May 2017. The Summary of Facts states that the new acidulation controller started work at 5.25am.

The log for that shift records a stoppage between 0600 and 0613 for “fill up the ground rock hopper”. When the manufacturing process was re-started, however, the Summary states that the conveyor was running at the same speed it had been running at previously, 500mm per minute, being set to do so. At approximately 7.00am the acidulation controller reset the speed to 300mm per minute to improve the consistency of the product for granulation and, according to the Summary, because that was the speed that it had been set to when he had been working the previous week. The acidulation controller did not check with the team leader or the process chemist before decreasing the speed. He also did not decrease the feed rate of the slurry to compensate for the reduced speed. Consequently, the height of the “cake” increased again, preventing the extraction of the contaminant gases and overwhelming the hygiene system. At approximately 7.35am on 22 May 2017 a cloud of fumes from the process bypassed the treatment systems and discharged to air via the roof vents on the manufacturing plant. The Summary states that the acidulation controller was not aware that this was occurring. People outside the manufacturing plant observed the discharge as a gas cloud 20-30m wide. Some of these people tried to contact the acidulation controller on radio but got no response. They were successful in contacting the granulation controller, who shut the plant down at 7.50am. At about the same time the site manager and the process chemist were notified and according to the Summary decided not to activate the site’s emergency response procedure and also not to notify neighbours of the discharge because they considered that the cloud had dispersed and there was no further risk to the public. WorkSafe NZ were notified at 8.06am. After two unsuccessful attempts to contact a compliance officer of the Regional Council, Ballance notified the Regional Council on its pollution hotline at 12.07pm.

### **The effects of the discharge**

[16] The summary records that several employees of Ballance were exposed to the discharge and experienced coughing, a funny taste in their mouths and irritation to their eyes and respiratory system, but says that the symptoms were relatively short-lived.

[17] Two truck drivers employed by Winstone Transport were exposed to the discharge, one on the Ballance site washing his vehicle and the other outside the Ballance site walking along Totara Street after dropping his truck off for servicing. Both experienced coughing, respiratory problems and dizziness. Both were taken to Tauranga Hospital and given oxygen, paracetamol and anti-nausea medication.

### **Subsequent enquiries**

[18] The Summary of Facts included an incident investigation report dated 22 May 2017 prepared by Ballance. The investigation findings included that there was no warning system available to the operator for both the height of the product in the acidulation den nor the flow rate in the scrubbing system, with the only controls being visual. The report states that the environment in both of those areas is such that any system is unlikely to last and that various forms of flow meters have been trialled but found to be unreliable. The report suggests further indication of a detection system fitted outside the roof vents as an option. The report states that the root causes of the incident included:

Communications – no standard or formal structure to hand over process. Operator not clear on why the den floor speed was increased by previous shifts. Action: Implement formal shift handover process.

Emergency response – late communication, radio channel 6 not used to communicate the event site-wide. Current evacuation alarm does not account for gas release, and will draw people out of buildings to [sic]. Action: emergency response manual to be reviewed, including response to gas release.

Human engineering – controls need improvement, knowledge base decisions are routinely required from monitoring multiple items manually. Potential for warning systems to detect errors earlier. Action: conduct FMEA and CP, implement high priority corrective actions.

[19] Under condition 12.3 of its resource consent, Ballance is required to provide a report to the Regional Council summarising the previous month's activities, including details of any uncontrolled discharges. The report about the discharge on 22 May 2017 was provided on 21 August 2017. The report is as summarised above.

[20] Ballance provided the Regional Council with a statement that it had undertaken remedial steps, including those identified in its incident investigation report. As well, Ballance states that it has modified the operating computer in the manufacturing plant

so that if the den volume is calculated to be too small to allow the extraction system to operate correctly, an alarm will trigger to alert the acidulation controller, with an automatic shutoff function if the controller fails to adjust the settings within 20 seconds of the alarm. Ballance states that it has implemented the same improvement in its plant at Awarua, Invercargill. Ballance states that it is still investigating fluoride monitoring and whether a warning system could be installed by the roof vents.

[21] The Regional Council also obtained an independent review of the incident and the incident investigation report from Mr Kevin Rolfe, a chemical engineer and environmental management specialist. A copy of this report was provided to me. Mr Rolfe's report is critical of a number of aspects, both in relation to the management of the manufacturing plant and the investigation of the incident by Ballance. Of particular relevance to sentencing, Mr Rolfe observes that the plant has been operating for more than three decades and that incidents of this kind should not occur as the operating parameters for the process should be well understood.

### **Previous convictions**

[22] The operations on this site have been the subject of two previous prosecutions and convictions.

[23] In 1999, Ballance's predecessor discharged excessive sulphur dioxide from the main stack of its acid plant on 17 June. The discharge was over four times the level allowed under its consent at that time. The discharge led to a number of people working at nearby sites to receive medical treatment for watery eyes, sore throats, wheeziness, nausea and shortness of breath.

[24] The company was charged with contravening s 15(1)(c) of the Act and ultimately pleaded guilty. It was convicted and fined \$35,000, with a subsequent variation so that \$5,000 was paid as reparations to two of the victims.<sup>1</sup>

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<sup>1</sup> *Bay of Plenty Regional Council v BOP Fertiliser Limited*, District Court Tauranga, CRN 9070018804, 23 February 2001.

[25] The second prosecution was in 2014. On 4 May 2014 Ballance discharged excessive levels of sulphur dioxide from the main stack of the acid plant. The plant did not shut down automatically because the trip point in the acid plant stack had been set too high. Nine people working at the Port of Tauranga were affected, with the effects including coughing, wheezing, sore throats, sore eyes and difficulty breathing, and one person sought medical treatment.

[26] Ballance was charged with contravening s 15(1)(c) of the Act, pleaded guilty and was convicted and fined \$60,000.<sup>2</sup>

[27] It is also relevant to note that following 37 complaints about air quality in the vicinity of the plant during 2014-2015, the Regional Council installed air quality monitors at Whareroa marae and at Tauranga Bridge Marina in September 2015. Air quality monitoring between 21 January 2016 and 9 May 2016 at the marae indicated sulphur dioxide concentrations that exceeded the National Environmental Standards for air quality, which imposes a threshold of 350mg/m<sup>3</sup> per hour, on eight occasions, with two of the discharges exceeding the maximum NES threshold of 570mg/m<sup>3</sup> per hour. The Regional Council issued an abatement notice to Ballance on 10 June 2016 (number 2016/A037) requiring it to cease discharging sulphur dioxide in contravention of regulation 13 of that NES. On 12 October 2017, the Regional Council cancelled the abatement notice on the basis that there had been no breaches of regulation 13 since June 2016, and that significant improvements had been made to the acid plant since that time and because the discharge on 22 May 2017, which is the subject of this sentencing, was a separate issue. Counsel for Ballance also submitted that the abatement notice was of limited if any relevance, because it was not based on any breach of Ballance's discharge consent, and because the ambient levels of sulphur dioxide in this area could well be affected by other activities, including discharges from ships in the Port of Tauranga.

### **Matters in dispute**

[28] In her submissions on behalf of Ballance, counsel submitted that there were four aspects of the Summary of Facts that were not agreed:

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<sup>2</sup> *Bay of Plenty Regional Council v Ballance Agri-Nutrients Limited* [2015] NZDC 4641.

- (i) the composition of the discharge;
- (ii) the effects of chronic exposure;
- (iii) the improvements to Ballance's acid plant after the 1999 and 2014 discharges; and
- (iv) the relevance of the abatement notice.

[29] After hearing from both counsel, who were agreed that none of these matters required resolution by a separate hearing, in relation to the composition of the discharge, Ballance expressed particular concern about the reference to hydrogen fluoride. I note, however, that the charge to which Ballance has pleaded guilty includes a reference to "fluoride" in the discharge and that Ballance's process engineer, Mr Jakub Skut, has made an affidavit which acknowledges that the fugitive emissions from the acidulation den will include gaseous fluorides such as silicon tetrafluoride and particulate fluorides such as fluorospar and fluorapatite. It appears to me that it is unnecessary to analyse the chemical reactions and their products very far beyond this. In relation to the references in the Summary to the effects of chronic exposure, this appears to me to be more for completeness rather than to raise any aggravated effect, as the charge plainly only relates to a single discharge event. In relation to the improvements to the acid plant, after previous convictions the prosecutor acknowledged that counsel for Ballance had placed that information before me and made no objection about it. In relation to the relevance of the abatement notice, I observe that there had been no appeal against the abatement notice, and that it had been cancelled. While acknowledging the possibility that ambient levels of sulphur dioxide might well include emissions from sources other than Ballance's operation, I stated that I would not investigate whether the abatement notice had been lawfully issued in this sentencing process.

[30] For those reasons, I told the parties that I did not attach great weight to any of these four matters, and did not consider that they were significant to my assessment of the sentence for the charge to which Ballance has pleaded guilty.

[31] Counsel for Ballance confirmed that in raising the issue as to the abatement notice, she did not mean to present any collateral challenge to the abatement notice.

### **Submissions on sentence**

[32] The focus of the submissions of both counsel was on the defendant's previous convictions, summarised above. I accept that those decisions are the most pertinent to my sentencing decision on the present charge.

[33] While the defendant contended that the previous convictions for air discharges from the plant related to a different part of the operation, and therefore were not a significant aggravating factor, the prosecutor argued that this was not a case of one person making a mistake, but rather was the result of a number of failings pointing to continued systemic problems, which did indicate a similarity to the earlier events leading to convictions. Counsel for the prosecutor emphasised the failure of the acidulation controllers to conduct a handover effectively, especially where there had been a shut-down of the process because of issues with fumes. She submitted that the notes on the den logs were insufficient to properly communicate the issue that had arisen and how it had been dealt with. She submitted that this could be compared to the issues that the acid plant in 2015 where the Court had noted at paragraphs [10] and [25] that no particular instructions had been given by one operator to another. She submitted that there had been a failure of effective supervision. She also pointed to the lack of a controlled emergency response in relation to the incident investigation, which referred to problems with failsafe technology in this manufacturing environment, she submitted that there should have been manual monitoring and manual signals.

[34] Against that background, counsel for the prosecutor submitted that the gravity of the offending was moderately serious, resulting in harmful substances discharged beyond the site. She pointed to the commercial context of the manufacturing operation and submitted that the public were entitled to expect Ballance to exercise a higher degree of vigilance.

[35] In relation to the relatively low level of effects experienced, counsel for the prosecutor submitted that this was a matter of good fortune rather than good management, and submitted that the fact that the discharge had extended beyond the boundaries of the site raised a real cause for concern.

[36] The prosecutor's submissions on an appropriate starting point understandably focussed on the outcome of the previous prosecutions. While noting that the 2001 conviction, with a fine of \$35,000, had been in the context of the provisions of s 339 as it stood before the amendments in 2011, counsel sought to relate it to the present sentencing limits by noting that \$35,000 equated to 17.5% of the \$200,000 which was the maximum fine for a corporate defendant at the time. In relation to the 2015 conviction, where a fine of \$80,000 had been imposed, she submitted that the present discharge represented a failure in the context of things that should have been learnt from earlier experience.

[37] In response to the submission of counsel for Ballance that there might be double-counting involved by relying on Ballance's prior convictions to support a greater degree of culpability as well as seeking an uplift from the starting point for those same prior convictions, the prosecutor submitted that Ballance's culpability was aggravated by its failure to address its systemic issues which, she submitted, was a different matter from an uplift of the starting point for prior relevant convictions. Counsel submitted there were no mitigating factors, referring to the comment of Mr Rolfe, the independent investigator, that, for such a well-established activity, events of this kind shouldn't occur.

[38] For those reasons, the prosecutor submitted that an appropriate starting point would be \$100,000. There should then be an uplift of 20% for the aggravating factors of the previous convictions for similar offending. There should be no discount for personal mitigating factors, but the defendant should be allowed a discount of 25% for an early guilty plea. This would result in a fine of \$90,000 which, she noted, was 15 percent of the current maximum of \$600,000.

[39] For Ballance, counsel noted that the company is a cooperative, and that its reputation and standing, both amongst its members and amongst the wider public, is a matter of grave concern to it. She submitted that culpability should be seen in the context of handover errors between the acidulation controllers. She stressed the operational measures in place to prevent discharges of this kind, including the level of supervision; the extent of visual inspection by the controllers; the extent of guidance available to the acidulation controller; the programme control of the conveyor and the detail of the logs. She submitted that the offending could not be said to be deliberate or reckless, and submitted that Ballance was frustrated that an incident of this kind had occurred given the extent to which the process controls are in place. She submitted that the weakness in the process was the reliance on the acidulation controller to follow instructions and make correct decisions, but submitted that Ballance has introduced further new measures to reduce the possibility of human error.

[40] While acknowledging that Ballance is involved in the commercial manufacture of fertiliser for profit, she submitted that the discharge had not occurred through any intent to maximise profit. She also submitted that this event was quite different in process terms from the events that had led to the previous conviction.

[41] Against that background, and in light of the cases referred to, she submitted that an appropriate starting point would be \$80,000. She acknowledged that the prior convictions meant that some uplift was appropriate, but submitted that 10 percent would be sufficient rather than 20 percent as the prosecutor sought. In support of that submission, she submitted that there is a lower need for deterrence where it required an unusual level of human error to expose the shortcomings of Ballance's manufacturing system.

[42] She also submitted that Ballance should receive a discount of 25 percent for an early guilty plea. Taking all matters of uplift and discount into account, she submitted that the total fine should be \$66,000.

### **Evaluation**

[43] There is no dispute that Ballance ought to pay a substantial fine, reflected in the submissions of counsel as warranting a starting point between \$80,000 and

\$100,000 and the acceptance that an uplift is justified given the company's previous convictions. The key issue presented in this case is the degree to which Ballance's previous convictions bear on the level of fine that ought to be imposed, both in terms of its degree of culpability and the degree to which such convictions are an aggravating factor. This stems from the related issue of the extent to which the latest offending is related to the previous offending or is a new problem, and also the extent to which the problem is systemic or the result of a particular error.

[44] The importance of these issues follows from the way in which the Sentencing Act 2002 and the case law on it from the higher courts seek to ensure that a rational and consistent approach is taken to sentencing in each case. In particular, there is a three-stage analysis required under the Sentencing Act 2002,<sup>3</sup> involving:

- (a) identifying a starting point for a fine based on the gravity of the offending in the particular case, having regard to the offender's degree of culpability and to sentencing levels in similar cases;
- (b) taking into account personal aggravating and mitigating factors relevant to the offender and the offending; and
- (c) making any appropriate discount for an early plea of guilty.

[45] On the present facts, it is important to keep in mind that while there is one defendant managing the operation overall, there are two plants within that operation. Ballance's previous convictions related to the acid plant and the present offending occurred in the manufacturing plant. While one ought to expect that a manufacturer engaged in processes which carry obvious risks of accidental discharges will take every reasonable precaution to avoid those risks, particularly after it has been convicted where such risks have occurred, it may be reasonable also to allow for some distinction where the process being examined is different from the process which gave rise to the previous conviction.

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<sup>3</sup> *Hessell v R* [2010] NZSC 135; [2010] 1 NZLR 607; at [72]; *R v Clifford* [2011] NZCA 360; [2012] 1 NZLR 23; at [60].

[46] However, the distinction may not be valid where the systemic nature of the current offending is the same or similar to that in the previous case. Here, the cause of the discharge, or at least the event which resulted in a discharge occurring, is clearly the mis-communication at the changeover in the shifts and inadequate systems to ensure that the process settings, and any changes to them, were at the forefront of the operators' awareness. From the material presented to me the problem did not involve any accident that might reduce the defendant's culpability. The problem is similar to the previous cases on this site where discharges from the acid plant occurred after shut-down periods for maintenance, when the plant was re-started and operating staff did not adequately check the plant, resulting in the discharges. I therefore accept the prosecutor's submission that the offending here is similar in seriousness to the two previous offences, being moderately serious, resulting in temporary health effects to people and near the site and revealing shortcomings in the defendant's operational and emergency processes.

[47] I accept that an appropriate starting point is a fine of \$100,000. This is higher than the starting point in the previous sentence which is justified in my view by the greater culpability of the defendant associated with its failure to improve change-over procedures throughout its plant when those clearly pose real risks of accidental discharges.

[48] In relation to aggravating factors, I am mindful of the warning from counsel for the defendant about double-counting. Having accepted that a higher starting point is warranted given the previous conviction, I must be careful in considering the same convictions as an aggravating factor. Nonetheless, some uplift is appropriate and I conclude that 10% is justified in this case.

[49] In relation to mitigating factors I do not consider there to be any which would justify a reduction in the level of fine. The level of co-operation with the prosecutor was in line with what any responsible operator ought to provide, and the preventative measures which have been introduced since the offending really only serve to indicate what might have been done earlier to ensure that such discharges did not occur. I also note that the prosecutor, as consent authority, is undertaking a review of Ballance's resource consent. That appears to me to be a highly desirable action.

[50] In relation to its guilty plea, it is appropriate to allow the defendant a discount of 25%.

**Sentence**

[51] On the charge in CRN 1700501702, I sentence Ballance Agri-Nutrients Limited to pay a fine of \$82,500. I order that the fine, less 10% payable to the Crown, be paid to the Bay of Plenty Regional Council.

A handwritten signature in black ink, appearing to read "Kirkpatrick", written in a cursive style.

DA Kirkpatrick  
District Court Judge and Environment Judge