

## Improved Landfill Management

### Landfill Safety

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### Landfill safety

- Where does safety start?
- What are the hazards
  - Contact with hazardous materials – chemicals, dust, flammable, toxic substances, rodents, birds
  - Vehicle related, collisions, vibration, toppling
  - Equipment related, pumps, hydraulic lines, electrical
  - Waste related
    - Potentially infectious, sharps, asbestos?
    - Stability of placed material
    - Leachate, landfill gas
  - Offsite
    - Migration of leachate, landfill gas, odours

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### Landfill safety

- Control risks
  - Traffic management
  - Access to active areas
  - Communication
  - Ongoing identification and rectification of problem areas
  - Personal protective equipment
  - Personal behaviours (hand washing, smoking, eating)
  - Communicating across languages

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### Landfill safety

- Awareness
- Training
- Attention to detail
  
- Attitudinal (staff set example for public)
  
- Emergency/ contingency plans

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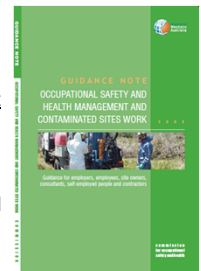
### Relevant OHS legislation

- Occupational Health and Safety (Plant) Regulations 1995 (2001)
- Occupational Health and Safety (Certification of Plant Users and Operators) Regulations 1994 (2007)
- Equipment (Public Safety) (General) Regulations 1995 (2005)
- Code of Practice No. 19 Plant 1995 (2018)
- <https://www.worksafe.vic.gov.au/waste-and-recycling>

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### Relevant WHS legislation and guidance

- Work Health and Safety (General) Regulations 2022
- [https://www.commerce.wa.gov.au/sites/default/files/atoms/files/contaminated\\_sites.pdf](https://www.commerce.wa.gov.au/sites/default/files/atoms/files/contaminated_sites.pdf)
- References waste management and landfills
- Code of Practice for Clinical and Related Waste Management Public Health Act 2016 February 2021



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## Landfill safety - Resources

- Landfill specific resources -
- <https://swana.org/search-results/#/safety%20training/?page=1&sort=relevance>
- [https://www.safework.nsw.gov.au/\\_\\_data/assets/pdf\\_file/0009/52875/Collection-of-domestic-waste-Code-of-practice.pdf](https://www.safework.nsw.gov.au/__data/assets/pdf_file/0009/52875/Collection-of-domestic-waste-Code-of-practice.pdf)
- [https://www.waste360.com/mag/waste\\_landfill\\_safety\\_no](https://www.waste360.com/mag/waste_landfill_safety_no)

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## Mornington Peninsula Resource Recovery Infrastructure

- Separation of pedestrians and machines



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## Landfill safety

- Visual inspection for build up of materials to reduce fire hazard
- Be aware of slip/trip/ fall hazard arising from working on waste



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## Vehicle accident at landfill

- Important to separate heavy and light vehicles
- Larimer County landfill, Colorado, USA



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## Garbage truck fire, Adelaide SA

- Increasingly common, often due to Li batteries



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## Landfill dozer tips

- Poor compaction, uneven compaction, operating close to batter

### Landfill dozer tips, injuring d

**■ Accident:** The rig apparently hit a soft spot in the garbage and toppled over.

By MATT COOPER  
The Register-Gazette

GOSHEN — A Springfield man was hospitalized Thursday morning after the 12-ton bulldozer he was riding tipped as he pushed garbage at Lane County's Short Mountain Landfill.

Jody Bartow was spreading garbage at

the 583-acre landfill southeast of Eugene about 10:45 a.m. when the vehicle apparently went out of control while rolling over unstable mounds of refuse, said Steve Nichols, safety coordinator for the Lane County Public Works Department.

"It appears he hit a soft spot and the machine's center of gravity caused it to tip over," Nichols said. "The garbage is difficult to read."

Bartow was belted in — critical to his safety, Nichols said — when the Caterpillar D8 bulldozer tipped over on its side. Other workers called the office for help,

and 'someone there called 911, Nichols said.

A rescue team from the Springfield fire department used ropes and a gurney like belt to pluck Bartow from the base of an area around which garbage was piled.

"You could put Aztec Stadium in the hole" where Bartow was located, Nichols said. Bartow was reported in stable condition Thursday afternoon at McKenzie-Willamette Hospital in Springfield, said Mike Moskovitz, county public information officer.

He suffered broken bones, were concerned about his abdominal pain, keep him over Moskovitz said.

A hospital i that Bartow was Nichols died on the accident on the accident state Occupational vision are inve said.

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### Bulldozer topples at landfill

- Brookhaven landfill, NY, USA



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### Dump truck overturns at landfill

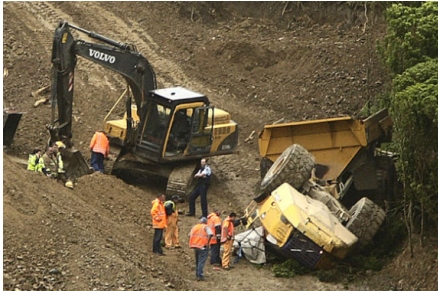
- Brownwood, Texas, USA. Drove through mud hole on haul road, fishtailed, left road and toppled down bank



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### Dump truck rolls over at landfill

- Southern landfill, Wellington, NZ, driver killed



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### Excavator toppling incident on landfill - US



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### Potential for toppling

- Large trucks/trailers on unstable or poorly compacted ground



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### Leachate tanker topples – causes stink!

- Worthing, UK



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## Public health and amenity

- Birds
- Impacts on neighbours, droppings on washing
- Bird borne disease
- Bird strike / aviation hazard
- Scavenging
- Litter
- Noise, vibration
- Dust

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## Birds at operating face



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## Birds on landfill



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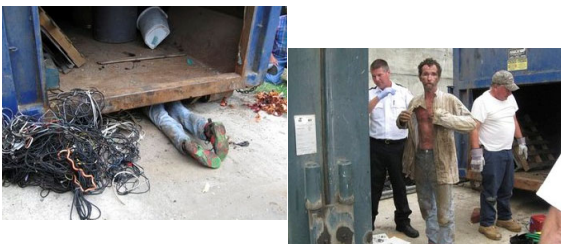
## Intruders

- Theft
- Vandalism
- Scavenging
- Illegal dumping
- Trail and quad bike riders
- 4WD
- Especially at unattended and poorly secured rural landfills

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## Copper thief trapped under skip

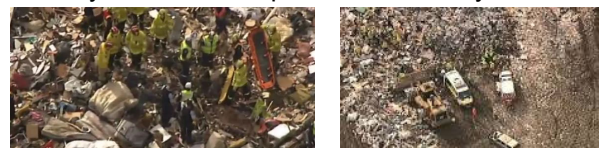
- Trapped for 12 hours!
- Dillon landfill, North Carolina, USA



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## Eastern Creek, NSW incident

- MAY 27, 2019 4:54PM - A man is dead and another is seriously injured after the pair became trapped beneath landfill in a freak worksite accident in western Sydney.
- Hit by 55 tonne compactor, covered by waste



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## NSW incident inquiry recommendations

- Identifying traffic hazards in consultation with workers and plant operators where mobile plant is in use and contact with pedestrians may occur
- Eliminating risks by designing separation systems
- Scheduling work so plant and people are not working in the same area at the same time
- Separating pedestrians from moving plant and vehicles using bollards, barriers, safety rails and exclusion zones
- Using audible and visible alarms to identify moving plant (e.g. reversing alarm, flashing lights)
- Establishing traffic flow patterns, developing right of way procedures, providing signage and implementing speed limits
- Using spotters or dedicated traffic controllers who are always in sight of the plant operator
- Having clear and effective communication systems in place
- Restricting access to essential personnel only
- Using high-visibility garments

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