



Intec Ltd

ABN 25 001 150 849

Superior and Sustainable Metals Production

Level 3
2 Elizabeth Plaza
North Sydney NSW 2060 Australia
PO Box 1507
North Sydney NSW 2059 Australia



Phone: 02-9954 7888
Fax: 02-8904 0334
Email: mail@intec.com.au
Website: www.intec.com.au
ASX code: INL

Companies Announcements Office
Australian Securities Exchange

23 March 2011

Industrial & Commercial Waste Recycling 2011 Conference

As part of ongoing marketing and industry communication, Dave Sammut, Corporate Development Manager of Intec Ltd (ASX: INL), will today deliver the attached presentation to the Industrial & Commercial Waste Recycling 2011 Conference in Melbourne.

A video of the presentation will be available on Intec's web site by early next week.

Yours faithfully
Intec Ltd

Philip R Wood
Managing Director and Chief Executive Officer

About Intec Ltd

Intec Ltd is an Australian company which owns the Intec Process for superior and sustainable metals production. The Intec Process comprises a set of patented chloride-based hydrometallurgical processes that have been demonstrated to produce high purity base and precious metals from concentrates of sulphide and oxide ores, tailings and industrial wastes. The Intec Process has substantial environmental and cost advantages over both the widely used conventional smelting and refining processes and other known hydrometallurgical processes.



Intec Ltd

Superior and Sustainable Metals Production

Industrial Ecology in Practice: A Case Study in the Clean Reuse of Heavy Metal Wastes

Industrial & Commercial Waste Recycling 2011

Melbourne 23 March 2011



Intec Ltd

Superior and Sustainable Metals Production

Intec: Looking at Waste With a Fresh Perspective

Intec is a world leader in the field of chloride hydrometallurgy with an extensive portfolio of international patents. Intec is successfully applying its technology to the recycling of heavy metals from industrial wastes in Australia.

Intec is using its technology, know-how and infrastructure for the recovery of base and precious metal products from a wide range of mineral and industrial resources.





Intec Ltd

Superior and Sustainable Metals Production

Why Be Wasteful With Waste?

In many cases, the defining aspect of a waste is not its chemistry or its physical features, but its provenance.

- Mineral ores come out of the ground as highly impure mixtures.
 - They can contain very low levels of the desired metal.
 - As example, the gold industry mines one tonne of ore to recover as little as one gram of gold, or up to seven tonnes mined if you count typical overburden ratios.
 - A typical copper ore might contain 1% metal, so that the tonne of ore is worth \$80 *before* mining, milling, flotation, transportation, smelting and refining costs are taken into account.
 - A typical zinc ore might contain 8% metal, worth \$160.
- Many inorganic industrial wastes can contain at least this much value per tonne, or considerably more.
- **The difference: provenance and volume.**
 - When a metal-bearing material is produced as an unintended by-product than a deliberately sought product, it is highly regulated.
- **This leads to wasteful thinking.**



Intec Ltd

Superior and Sustainable Metals Production

Waste or Resource?

Uniform-consistency inorganic fine solid

30% Zn

5 % Pb

2 % Cl

Total contained metal value >\$700 per tonne

Waste!

Electric arc furnace dust, classed as Hazardous Waste throughout Australia
Producers pay to send this to smelters, stockpiles or landfill





Intec Ltd

Superior and Sustainable Metals Production

Waste or Resource?

Variable solid

0.1% copper

0.4 g/t gold

Total contained metal value <\$50 per tonne

Mineral Resource

NSW mineral ore: Cadia mine (source: www.newcrest.com.au/operations.asp?category=2)

Smelters buy concentrate produced from this ore



Intec Ltd

Superior and Sustainable Metals Production

Waste or Resource?

Variable sludge

43% lead

2% iron

2% copper

7% tin

9% nickel

Total contained metal value >\$1,000 per tonne

Waste!

Plating industry wastewater sludge

Producers pay to stabilise this as waste and dump it to landfill





Intec Ltd

Superior and Sustainable Metals Production

Waste or Resource?

Liquid resource

7% zinc

10% iron

Total contained metal value ~\$200 per tonne

Waste!

Galvanising industry spent pickle liquor

Producers pay to stabilise this as waste and send to landfill



Intec Ltd

Superior and Sustainable Metals Production

Disposing of These Materials is Truly Wasteful

Economic cost

- Treatment and stabilisation/immobilisation fees
- Fresh stabilisation/immobilisation reagents, 'bulking out' the waste
- Transport of 'bulked out' mass
- Landfill gate charges for 'bulked out' mass
- Government levies for 'bulked out' mass
- Permanent loss of contained economic value

Environmental cost

- No stabilisation technology is permanent
- At best, stabilisation/immobilisation simply slows the release of the metals
- Recurrent local community issues affect all landfills to some extent





Intec Ltd

Superior and Sustainable Metals Production

Recover the value

It is much better to recover the metals

- No environmental legacy
- Massively reduced quantity and hazard
- Zero waste options for some 'waste' types
- Offset the costs using the contained metal value
- Potentially valuable by-products
- Environmental, ethical, intellectual and economic benefit



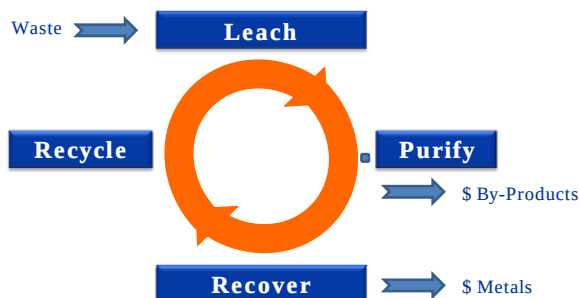
Intec Ltd

Superior and Sustainable Metals Production

The Intec Process

Recycling a range of wastes

- Cyclic or single pass
- Leach the metals into solution
- Extract by-product(s) if appropriate
- Choice of product(s): metal or chemical intermediates
- Highly flexible and adaptable to various feedstocks





Intec Ltd

Superior and Sustainable Metals Production

CASE STUDY: Spent Pickle Liquor Recycling at Intec Envirometals' Research Facility in Burnie, Tasmania



Intec Ltd

Superior and Sustainable Metals Production

Current Project: Galvanizing Industry Wastes

- Steel is dipped in hydrochloric acid prior to hot-dip galvanizing
- Over time, the acid strength decreases, and the acid builds iron, zinc and other contaminants
- This 'spent pickle liquor' (SPL) is conventionally disposed of as a waste, by first precipitating the metals with alkali, then dumping the heavy metal waste in landfill
- Intec has proposed a cleaner, cheaper **zero waste** alternative process to recycle the metals and acid back into useful products





Intec Ltd

Superior and Sustainable Metals Production

SPL Recycling Project: Collaboration and Support

- This project is a direct result of an introduction made at EPA Victoria's HazWaste Expo in November 2008
- A typical industrial company with a waste disposal issue: GB Galvanizing Service Pty Ltd (GBG), one of Victoria's largest galvanising companies
- A company with a technology solution: Intec Ltd
- Intec is working with GBG as our Victorian project partner to deliver an SPL recycling plant at GBG's Dandenong site
- EPA Victoria is contributing \$780,000 from the HazWaste fund to GBG
- Total project cost estimated at ~\$2.85 million
- The project is being implemented through three stages:
 - Phase 1: Pilot plant trials
 - Phase 2: Semi-commercial demonstration plant trials
 - Phase 3: Commercial plant construction and operation in Victoria



Intec Ltd

Superior and Sustainable Metals Production

SPL Recycling Project: Stage 1

- Continuous pilot plant trials: November 2009 to February 2010
- Provisional patent lodged
- Key outcomes:
 - Tested a range of operating variables in order to frame the key operating parameters for the technology.
 - 175 hours of operation, during which 289 litres of spent pickle acid were recycled.
 - Successfully demonstrated both the recovery and electrowinning of zinc metal product, and also iron separation and recovery.





Intec Ltd

Superior and Sustainable Metals Production

SPL Recycling Project: Stage 2

- Intec is currently working on Phase 2 semi-commercial trials
- First trials November to December 2010
- These trials proved the technology at the commercial scale
- Engineering data generated for materials of construction and process optimisation
- New equipment ordered and installed
- Second trials commenced 21 February 2011 to demonstrate the reliability of the equipment
- Operations may continue after the current trial is complete:
 - Continue to yield engineering data
 - Continue environmentally superior outcomes for interim SPL generated until the commercial plant is built
 - Generate products for GBG's reuse
 - Generate by-products for sales evaluation
 - Subject to commercial considerations and regulatory approval



Intec Ltd

Superior and Sustainable Metals Production

SPL Recycling Project: Stage 3

- The final phase of the project involves the construction of a full-scale commercial facility at GBG's Dandenong site
- Recycle a minimum of 1,000,000 L per year of SPL
- Avoid a minimum of 1,700 tonnes per year of liquid waste generation
- Avoid a minimum of 600 tonnes per year of solid waste disposal to landfill
- Generate a minimum of 70 tonnes of zinc metal per year for reuse by GBG
- Generate fresh acid for reuse by GBG in the pickling bath
- Generate iron and calcium by-products for industry use
- Victoria produces approx. 3,000,000L per year of SPL. Is there a market opportunity for a larger plant capacity?
- Economics:
 - The plant is competitive at 1,000,000L per year vs current disposal costs
 - At 3,000,000L per year, modelling says that it would change the market





Intec Ltd

Superior and Sustainable Metals Production

SPL Recycling: Future Opportunities

- Spent Pickle Liquor is a waste that is common to the galvanizing industry, domestically and internationally
- Within Australia:
 - GBG has 117 m³ of zinc bath capacity, and produces ~1 MLpa SPL
 - Victoria has ~286 m³ of zinc bath capacity, and produces ~3 MLpa
 - Australia has a total of ~1,400 m³ capacity
 - An estimate of total Australian SPL might be ~12-15 MLpa SPL
 - Are there opportunities in other states, particularly NSW & Queensland?
- Internationally:
 - European markets favour zero-waste technologies
 - Intec has already received international enquiries about the developing SPL recycling technology
 - Europe, USA and Asia (particularly the growing China & India galvanizing industries) might be huge potential markets



Intec Ltd

Superior and Sustainable Metals Production

Industrial Ecology

Industrial Ecology promotes enhanced sustainability by stimulating innovations in the reuse of waste materials. The wastes or by-products of one industry are used as inputs in another industry, thereby closing the material loop of industrial systems and minimising waste.

Intec is pleased to be part of the Industrial Ecology Network, an industry-driven initiative as part of the Waste Management Association of Australia:

“To promote and encourage the development of activities, processes and relationship between entities which convert surplus, spent or unwanted materials, energy and services into valuable resources.”

Member of:





Intec Ltd

Superior and Sustainable Metals Production

Intec is Looking for Opportunities

- Metal sludges, solids, filter cakes and waste waters
- Metals-bearing wastewaters (chlorides, fluorides, sulphates, ammonia, etc)
- Chromium-bearing wastes – plating industry, timber industry 'CCA' (copper chrome arsenate), and more
- Battery chemical wastes, particularly NiCad or NiMH
- Acid mine drainage and mineral residues (jarosites, pyrites, tailings)
- Electronic wastes (lead from CRT monitors, precious metals from circuit boards)



Intec Ltd

Superior and Sustainable Metals Production

www.intec.com.au

Head Office

Dave Sammut
Corporate Development Manager
Level 3, 2 Elizabeth Plaza
North Sydney, NSW 2060
(ph): +61 2 9954 7888
(fax): +61 2 8904 0334
(email): dave@intec.com.au

Tasmanian Operations

Brian Banister
Chief Operating Officer
10-12 River Road
Burnie, TAS 7320
(ph): +61 3 6431 9867
(fax): +61 3 6431 3629
(email): brian.banister@intec.com.au

