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Health Hazard Identification – Proposed Resource Recovery Facility Block 11 Section 21 Hume

Robson Environmental Pty Ltd (Robson) was asked by Flexible Australia to undertake a Health Impact Assessment for the Environmental Impact Statement for the Proposed Resource Recovery Facility at Block 11, Section 21 in Hume. Stage One of this assessment was identification of hazards, including:

1. Background research – review of information provided by Flexible Australia, and a literature review;
2. Hazard identification workshop with Flexible Australia, undertaken on May 9, 2019; and
3. Documentation of identified hazards, as below.

Hazard		Potentially Affected Waste Streams	Sources
Aluminium (Al)	Heavy Metals/Elements	<ul style="list-style-type: none"> • Street Sweepings • Storm Water 	Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Antimony (Sb)			Tyre/brakes, Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Barium (Ba)			Tyre/brakes, Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Cadmium (Ca)			Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Chromium (Cr)			Tyre/brakes, Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Copper (Cu)			Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Iron (Fe)			Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Lead (Pb)			Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate

Hazard		Potentially Affected Waste Streams	Sources
Magnesium (Mg)			Tyre/brakes, Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Manganese (Mn)			Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Mercury (Hg)			Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Nitrogen (N)		• Storm Water	
Phosphorous (P)			
Platinum (Pt)			Engine oils/lube
Potassium (K)			Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate
Vanadium (V)		• Street Sweepings • Storm Water	Tyre/brakes Road base materials, vehicular by-products deposits, soil, leaf litter, dust, smog fallout, vegetation leachate, engine oils/lube
Zinc (Zn)			
Asbestos	Mineral fibres	• Street Sweepings • Storm Water	Tyres/brakes, construction works
Volatile Organic Compounds	Compounds that easily become vapours or gasses	• Street Sweepings • Storm Water	Exhausts CTPV in road base
Polycyclic Aromatic Hydrocarbons (PAHs)	Organic compounds containing only carbon and hydrogen composed of aromatic rings	• Hydro drilling • Hydro excavation	
Per and Poly Fluoroalkyl Substances (PFAS – PFOS, PFOA)	Man made chemicals that are very persistent in the environment and the body. Some evidence that they can lead to adverse health effects	• Hydro drilling • Excavation mud • Stormwater pits and sludges	Fire fighting foams (car accidents, fuel fires, training), Pesticides

Hazard		Potentially Affected Waste Streams	Sources
Tetraethyl lead Alcohol Methycyclopentadienyl Manganese tricarbonyl (MMT) Ferrocene Iron pentacarbonyl Toluene Isooctane	Gasoline additive used to reduce engine knocking and increase octane rating of fuels by raising auto-ignition temperature and pressure	<ul style="list-style-type: none"> • Street Sweepings • Storm Water 	Gasoline, fuel, exhaust
Bentonite	An absorbent aluminium phyllosilicate clay used for drilling as a lubricant and cooling substrate	<ul style="list-style-type: none"> • Hydro drilling mud 	Additive during hydro drilling
Fungicides	Biocide chemical compound used to kill fungi or their spores	<ul style="list-style-type: none"> • Stormwater • Street sweeping 	Leaf litter, soils, vegetation leachate, creosote power-pole leaching, herbicide/fertilizer run off from garden beds
Insecticides	Substances used to kill insects.		
Viruses, Bacteria, Fungi	Biological substances that pose a risk to human health. Includes viruses and toxins	<ul style="list-style-type: none"> • Street Sweepings • Storm Water • Bunker Sand 	Animals, body fluids, needles, decomposing material, soil
Legionella (soil and water)	Pathogenic group of bacteria that causes Legionnaires' disease and/or Pontiac Fever	<ul style="list-style-type: none"> • Storm Water • Street Sweepings • Bunker Sand • Hydro drilling • Hydro excavation mud 	Warm, stagnant water, soil, end products (compost material)
Faeces	Waste matter remaining after food is digested (animals and human)	<ul style="list-style-type: none"> • Storm Water • Bunker Sand 	Scats (animals), human excrement
Cigarette butts	Un-smoked segments of cigarettes containing the filter with absorbed chemicals and some remaining tobacco	<ul style="list-style-type: none"> • Street Sweepings • Storm Water • Bunker Sand 	Cigarettes not disposed of appropriately
Unknown Chemicals	Produced from poor industry practice and unventilated exhaust fall out, construction and spills	<ul style="list-style-type: none"> • Street Sweepings • Storm Water • Bunker Sand 	Unknown
pH Adjusters	Acids and alkalis used to adjust the pH of solutions	<ul style="list-style-type: none"> • Additive during processing 	Manufacturing, end products, flocculent cake
Flocculants	High MW, water soluble organic polymers used to clump fine particles together		

Hazard		Potentially Affected Waste Streams	Sources
Coagulants	Inorganic salts, generally of aluminium or iron, used to cause a fluid to change to a solid or semi-solid state		
Hydrocarbons	Chemicals made up of only hydrogen and carbon, often found in fuels	<ul style="list-style-type: none"> • Hydro drilling • Hydro excavation mud 	Contaminated soil and mud
Dust (Respirable)	Dust less than 5 µm in diameter	<ul style="list-style-type: none"> • End Products • Bunker Sand 	Aggregate – all fractions, sands
Respirable Crystalline Silica	Crystalline form of silicon dioxide <5 µm in diameter	<ul style="list-style-type: none"> • End Products • Bunker Sand 	Aggregate – all fractions, sands

Please do not hesitate to contact the undersigned for further information.

Yours sincerely,



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The report, including any risk assessment presented, is based on the information obtained by Robson at the time of sampling. Any variation in the environment, activities, methods, practices, products, or equipment used may change exposures to hazards, invalidating the presented risk assessment. Robson recommends that risks be re-assessed prior to making any changes to the aforementioned factors.

The findings contained within this report are developed from the interpretation of the results of specific sampling methods used in accordance with generally accepted practices and standards, based on the current state of knowledge. To the best of Robson's knowledge, our assessment of the data represents a reasonable interpretation of the general conditions, and subsequent risk at the time of sampling. Should you have any questions or require further information please contact Robson Environmental.

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