

Submission  
No 170

**INQUIRY INTO CURRENT AND POTENTIAL IMPACTS OF  
GOLD, SILVER, LEAD AND ZINC MINING ON HUMAN  
HEALTH, LAND, AIR AND WATER QUALITY IN NEW  
SOUTH WALES**

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Partially  
Confidential

To whom it may concern at the EPA,

Thankyou sincerely for taking the time to read my submission opposing the proposed open-pit goldmine of The McPhillamy's Gold Project and listening to my deep concerns for the utter disregard for the health and wellbeing of not only our environment and its flora and fauna, but also the health and wellbeing of the people within our local community. Throughout my submission I refer to some of the information provided by some of the professionals who spoke at the IPC hearing in Blayney earlier this year, as well as to various resources addressing the adverse impacts goldmines have on people's physical, cognitive and emotional health and wellbeing, with my focus being predominately on the dangerous impacts that heavy metal toxicity have on the people residing near a goldmine. My innate purpose for writing this submission is to convey the outrageousness destruction this mine will cause to the inner and outer worlds of the people within the Blayney Shire in the severe hopes that the EPA will utilise the common sense, intelligence, ethics and foresight so desperately required from a regulatory body and support the future of Blayney Shire's people and environment by objecting to any further 'progress' of the mining operations by Regis Resources at Kings Plains.

The recent findings from the EPA regarding the increased presence of a range of heavy metals within residents living nearby the Cadia mine is not an uncommon finding once one begins to do some research into other mining communities both within Australia and worldwide. The destructive and archaic practices of the mining industry inevitably result in exposing copious particles of heavy metals that were once embedded deep underground into the atmosphere as dust, as well as leaching chemicals and other heavy metals into the ground water, thus contaminating the quality, flow and safety of natural waterways and aquifers. Once heavy metals are released into the soil matrix and waters, most heavy metals are strongly retained and their adverse effects can last for a very long time (Hidayati et.al., 2009, pp. 88-94).

At the IPC hearing [redacted] acknowledged the water situation within the McPhillamys Project; by allowing Regis to plug the 22 + springs it WILL impact the river system and never be the same hydrologically or ecologically. [redacted] discussed also how the brine pipeline with a flow rate of 150L/second would contain high concentrations of not just salinity, but also other dangerous pollutants of maganese, nickel and zinc among others. It was a frightening for the community to hear such speakers discuss the very real and ultimately inevitable risk of this 'legacy' leaking and of the exhaustively long (centuries long) requirement to continually monitor, measure and assess the long term impacts and destruction of the environment an inevitable leakage and seepage of contaminated brine will have on the environment, with experts stating that once such an incident occurs, it will be forever IMPOSSIBLE to "turn off the tap" as stated by [redacted] in his presentation. Contamination of the natural environment with these heavy metals and pollutants will compromise the health of flora and fauna who ingest this brine, a statement supported by speaker Professor Ian Wright who identified that the plants contaminated from the old Sunny Corner mine STILL fail to grow to this day. It was acknowledged that such deeply intrusive and aggressive practices just cannot be mitigated. Both the pipeline and the TSF pose a real and eventual risk to nature and human health, with many speakers and professionals at the IPC hearing including Melissa McGrath, Professor Mudd and Professor Ian Wright identified the very presence of this mine is 'likely' to cause harm and 'likely' to impact. Over time, over lifetimes, at some point, inevitably, the Belubula river WILL become contaminated from the long-term leeching of the chemical slurry in the TSF. The consequence of this, as there always is one, is that the literal 'flow on' effects of this contamination impacts the aquatic animals, the land animals and the birds that drink from this river... and some of these contaminated creatures will be ingested by the people of this community.

As the complex and intricate web of an ecosystem reveals - and has done so only recently with the developing awareness of the consequences from Cadia's mine operations - contamination of water, flora and fauna WILL result in toxins within the citizens of this community. It is inevitable - and now the EPA has not surprisingly recently discovered high levels of lead, nickel, and selenium in the blood and rainwater of residents living near the Cadia Valley Operations gold and copper mine.

Heavy metals pose a great risk for the wellbeing of the environment and community and each of these recently discovered heavy metals will be discussed and their dangerous health implications addressed:

Environmental contamination can lead to ingestion and inhalation of lead and its compounds. According to the National Health and Medical Research Council (NHMRC) lead can affect almost every organ and system in our bodies. In adults, lead can increase blood pressure and cause infertility, nerve disorders, and muscle and joint pain. It can also make you irritable and affect your ability to concentrate and remember. Lead is especially dangerous for children and children in utero, thus protecting children and pregnant women from lead exposure is important to lifelong health. Lead in the body is distributed to the brain, liver, kidney and bones and is stored in the teeth and bones, where it can accumulate over time and is released into blood during pregnancy and becomes a source of exposure to the developing fetus (<https://www.who.int>).

There is no level of exposure to lead that is known to be without harmful effects. No safe blood lead level in children has been identified, with even low levels of lead in the blood have been shown to negatively affect a child's brain development, intelligence and ability to pay attention, resulting in behavioural changes such as reduced attention span and increased antisocial behaviour. At high levels of lead exposure the brain and central nervous system can be severely damaged causing coma, convulsions and even death. Children who survive severe lead poisoning may be left with permanent intellectual disability and behavioural disorders. Lead exposure also causes anaemia, hypertension, renal impairment, immunotoxicity and toxicity to the reproductive organs, and for a sobering thought, the neurological and behavioural effects of lead are believed to be irreversible (*Agency for Toxic Substances and Disease Registry*). The Blayney region comprises of numerous early child care centres to cater for the significant amount of young children who reside within the Blayney Shire. As of last census (2021), children under 5 years of age comprised of around 7.5% of Blayney's population (<https://abs.gov.au>). Children may need to be tested for lead poisoning if they have a risk of exposure to lead, even when they don't have symptoms due to even very low levels of lead damaging a child's developing brain and causing long-term growth and learning problems.

In regards to Nickel toxicity, such contact can cause a variety of mild to severe negative impacts on human health, such as asthma, dermatitis, cardiovascular and kidney diseases, lung fibrosis, as well as cancers of the respiratory tract and nasal passages, with the IARC (The International Agency for Research on Cancer) classifying soluble and insoluble nickel compounds as Group 1 carcinogenic to humans (*IARC, 2012*).

It has been identified that inhalation exposure is a main route for nickel-induced toxicity in the respiratory tract, in the lung, and immune system (*Chen et. al 2017, pp. 181–197*). In an article entitled *Respiratory cancer risks associated with low-level nickel exposure*, it revealed that Nickel can enter the body via inhalation, ingestion with food and dermal absorption, however, the route for this element to enter cells is determined by its chemical form. The riskiest route of exposure to nickel is by inhalation, with water-soluble nickel compounds absorbed by lungs and removed by the kidneys. They can cause nose and sinuses irritation and may also lead to losing the sense of smell and to the

nasal septum perforation. Insoluble nickel compounds remain in the lungs for a longer time, and they are the forms of nickel responsible for cancer (Seilkop & Oller 2003, pp.173–190).

The nervous system is one of the main target organs for Nickel toxicity as it can accumulate in the brain. Allergy to nickel and metals is caused by the materials used in our daily life therefore the chances of triggering the onset of allergic reactions are high. This metal can cause an allergy that manifests as contact dermatitis, headaches, gastrointestinal and respiratory manifestations.

Mining and metal-mineral processing are among the main sources of selenium released into the environment which is no surprise that the EPA discovered it in the bloodstream of nearby residents. In *Monitoring and analysis of selenium as an emerging contaminant in mining industry: A critical review* (Etteieb et. al., 2020), they found that excessive levels of selenium may induce toxicity in human as selenosis, in grazing animals as alkali disease and in aquatic organisms as larval and developmental deformities and mortality.

Selenosis is the condition resulting from chronic selenium intoxication with symptoms including diarrhoea, nausea, fatigue, muscle aches and hair and nail damage or loss. At high levels selenium is toxic and several cases of overt toxicity and mortality have been reported following acute intoxication. Selenosis has been linked to human consumption of animals and foods from waters and soils contaminated with unnaturally high levels of selenium, a finding acknowledged in a report submitted to the International Joint Commission by the Health Professionals Advisory Board entitled *A Review of Human Health Impacts of Selenium in Aquatic Systems (2020, p.12)*.

Toxic human environmental exposure to selenium occur when selenium levels accumulate in the ecosystem via leaching from mining waste into aquatic systems, which accumulate in fish and wildlife. Widespread negative impacts on sensitive ecosystems and human health due to elevated selenium concentrations are anticipated for areas with expanding industrial and mining operations. Selenium contamination in aquatic ecosystems can cause a cascade of bioaccumulation events which often can extend the timeframe for intervention and restoration efforts over many years (Chapman, 1996). When considering potential association with chronic impacts and diseases, there is significant epidemiologic evidence that acute selenium exposure can result in neurotoxicity in humans, including symptoms such as lethargy, dizziness, motor weakness and burning/prickling in extremities.

The proposed McPhillamys Project at Kings Plains unlike Cadia, is open pit, therefore potentially radically increasing the likelihood of heavy metal contaminants found in the dust to blow across the 80 + residents in the Kings Plains locality, as well as blow over the town of Blayney and beyond, given that this is a very windy region characterised by frequent gusts. This mine may pose many other health risks to the community for according to *Regis Resources Appendix CC (2019, p.2)* they identify within their executive summary that the mine has selected cyanide leaching as the 'optimal gold recovery method' for their proposed project.

The use of cyanide is a threat to public health. Rapid poisoning may occur if cyanide is swallowed, inhaled (either as a vapour or dust) or absorbed through the skin (<https://digitallibrary.health.nt.gov.au>). Cyanide Poisoning Symptoms range from headaches, nausea, anxiety and breathing issues, to seizures, loss of consciousness and cardiac arrest. Accidental spills of cyanide solutions into rivers and streams worldwide have produced massive kills of fish and other aquatic biota (Eisler & Wiemeyer, 2004). Cyanide is highly toxic and was the killing agent used in gas chambers. Cyanide poisoning can occur through inhalation, ingestion and skin or eye contact. One teaspoon of a 2% solution can kill a person. In general, fish and other aquatic life are killed by

cyanide concentrations in the microgram/L range, whereas bird and mammal deaths result from cyanide concentrations in the milligram/L range. Evidence shows that cyanide compounds linger in affected plant and fish tissues and can persist in the environment for long periods of time ([www.mineralpolicy.org](http://www.mineralpolicy.org)).

Despite this, the mining industry claims cyanide is relatively safe because—even if it spills—it breaks down rapidly in surface water, a statement also made by Regis themselves, 'It is not toxic in all forms or concentrations and does not persist/accumulate in the environment' (*Regis Resources, Appendix CC, 2019, p. 4.*) However, the compounds that cyanide breaks down into can be harmful, of which Regis overlooks. Cyanide reacts with many other elements and is known to breakdown into several hundred different cyanide-related compounds. Despite the risks posed by these breakdown compounds, mines are not required to monitor or report these chemicals, with the record demonstrating that cyanide-leach mining is not being practiced safely. It is potentially very dangerous to the environment, wildlife and humans. The hardrock mining industry has a history of cyanide spills, with billions of gallons of cyanide contamination released into the environment, ever since cyanide-leaching began in the 1970s ([www.mineralpolicy.org](http://www.mineralpolicy.org)). Cyanide spills into groundwater can actually persist for long periods of time and contaminate drinking water aquifers, with cyanide contaminated groundwater also then polluting hydrologically connected neighbouring streams.

A quote from the DPE Assessment shown on a powerpoint slide during the IPC hearing, stated that this project is "in the public interest," and Regis has designed a project that is "minimising associated impacts on the surrounding landholders." Being forced to stay indoors in Regis' air-con for the next 6 years while infrastructure, blasting and bund walls are constructed is NOT sufficient minimisation, or as Regis loves to say 'mitigation.' NOTHING can be implemented to protect the landholders of Kings Plains from the devastating effects of this mine. Speaker [redacted] stated that from his studies and experiences with mining companies that predicted mitigation measures FAILED 64% of the time. The ONLY way to effectively mitigate all these horrendous environmental and health impacts and to protect the Kings Plains village is for the mine to be REJECTED to allow the beautiful area of Kings Plains and the natural environment and ecosystems to continue to flourish. Speaker Professor Warwick Giblin intelligently and articulately compared Regis' proposal with the rejected proposal of the Rocky Hill mine, identifying that simply too many people live in too close a vicinity to the proposed project for ANY mitigation to be sufficient.

Finally, and so importantly regarding the impact of wellbeing on the community is the significant issue on people's mental health. The mental health of these people and the violent intrusion this mine has already had on the lives of the community of Kings Plains, as well as those families who rely on the current health of the river system is shameful. Regardless of the money that Regis chooses to pay individual families in exchange for them abandoning the lives they have built and know, NO compensation is possible. Regis CANNOT compensate for loss of place. As mentioned in my speech on day 1 of the hearing, loss of place directly correlates with loss of self, and it does not matter how much one is paid, you cannot replace a home that is in your heart and in your blood. Kings Plains IS these people's country. There is no compensation for displacement and disconnection. [redacted] is suffering deeply because of Regis. He is fighting his way through life, lost in deep sorrow, depression and anxiety. The deep love and connection the villagers of Kings Plains have for their land and homes was clearly apparent and powerfully felt during the days of the hearing. Many of these people will break if they are forced to endure a broken homeland, with blasting replacing the call of kookaburras, and being forced to live inside and breathe the artificial and 'mitigated' air of the Regis air-con for the next 6 years while beyond their walls, Regis fill the skies with dust clouds and chemical pollutants; we all could see from Gemma Green's presentation the impacts Cadia mine is continuing

to have on the surrounding environment, that this IS and WILL create a real environmental and health crisis and in no way, shape or form, be of ANY benefit to our environment?!

With the proposed mine comes inevitably, the potential increased levels of such contaminants and heavy metals in the human population contributing to increased levels of cancers, inflammation and damage to the nervous system leading to neurodegenerative and inflammatory diseases within our community. Our children and future grandchildren should not have to bear the weight and responsibility of suffering with the consequences of living in a contaminated environment or contaminated body that is beyond repair.

"What we risk reveals what we value" and it is heartbreakingly immoral to even entertain valuing short-sighted monetary gains and archaic mining practices over the beauty and balance of our natural world and the health and wellbeing of our people and communities for generations to come.

With hope,

Bridie Kramer

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