From: "ALLAN BELL" <maadbell@gmail.com>
Sent: Thu, 11 Jan 2024 14:19:09 +1000
To: "Hinchinbrook Shire Council" <council@hinchinbrook.qld.gov.au>
Subject: Submission for MCU23\0005,RC23\0016, OPW23\0007
Attachments: Lithium hazards.pdf, vanadium hazards.pdf
Categories: Karli

Please see attachments in regards to the above development proposals.

Submission concerning Wind Turbines and Battery Storage Facility
MCU\0005, RC23\0016, OPW23\0007

Margaret Bell
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Mount Fox

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10/01/2024

Wind Turbines
The manufacturing alone of turbines uses masses amounts of electricity to generate power to make the steel.

Exorbitant freight costs, namely diesel, to transport these monstrosities to the chosen sites does not adhere to your environmental policies in reducing carbon and fossil fuel use.

I am aware of a case where a resident is recovering from deadly arsenic poisoning due his water tank being poisoned by dust from the turbines dispersing arsenic.

We are aware of the damage to health namely noise pollution, EMF discharge causing cancer illnesses, stress, depression, financial loss, affects of megahertz impacts, mood swings, nightmares, loss of equilibrium, headaches, tinnitus and lack of concentration to say the least.

The loss in agriculture due to the damage caused by the death of bees and other insects vital for pollination and health-giving properties to plants are irreversible and the destruction to our bird life flying into the blades and the change in radar frequencies from other native species such as bats, is not acceptable. There is enough man made destruction to our endangered species already.

The loss of income both in farming and tourism and reduction in the possible heritage listed land due to deterioration of land and roads is a great cause for concern.

Excavation , drilling , traffic damage to roads, water contamination and blasting especially around a dormant (yes dormant not extinct) volcano, makes one question the environmental studies for the projects
.
The lack of respect and consideration to those who reside in the area and those of the tribal lands and First Nations , especially the Sovereign Warrgamay peoples and country who call the land home is disgraceful.
Consideration is only for shareholders and corporate bodies.

When turbines are first started they require massive amounts of electricity. Where is this power coming from and how much is required to generate one turbine?

The very sight of these horrendous metal structures is an eye saw on the pristine landscape and cannot be allowed to be built in this area or any other area.

The impacts to humans and the environment must be considered and all parties where there is vested interest must be informed truthfully with knowledgeable research from both sides of this spectrum to decide on a unanimous outcome for the residents of Mount Fox and Ingham.

The disposal of blades after 25 year lifespan certainly can not to be dumped at Ravenshoe.Shame on your company if you are involved in this.

Lithium storage batteries.

The dangers of storage of lithium batteries is far reaching.

It is not recommended to store lithium batteries near moisture yet you have selected the land in Australia, where there is high humidity and heavy rainfall in the summer.Offering a higher risk of leakage of the batteries within the area.

Lithium batteries contain dangerous substances such as Vanadium and Lithium and leads to major health issues including the inhalation of the vapors should the highly volatile batteries or facility take fire. This does include carcinogenic properties.

The high risk also of fire in the area not only will have a detrimental affect on human and wildlife ,some of which including the red and yellow chested wren and the beautiful cassowary the council so proudly promotes,but the fires from these facilities and turbines will cause devastating damage to pristine forests,poison the rivers and lead to irreversible damage.

Of great concern is the amount of water that is going to be drained from the local water table making fertile soil unsustainable for crops and fodder as well as damaging a fragile ecosystem and depleting the landowners properties of good quality ground water.

An oxy moron of the green agenda is to want to reduce carbon footprints necessary for all survival in return for killing off everything we hold dear on the planet. Human life and the beauty of nature replaced by the almighty dollar.
Are insurance companies aware of the dangers lithium batteries pose to the wilderness and to humans.As you now are aware of the dangers and risks posed to the local community you can not be in denial of the dangers that are posed and the liabilities and claims that stand to threaten your companies should anything go wrong.

It is amazing that a clean green energy source with millions of dollars in feasibility studies has gone to ground with the Tully Millstream Dam,which could have created massive opportunities for tourism and irrigation for the area, leading to lush forestation and pastoral land, yet here are councils and companies happy to desecrate fertile land, native and heritage environments to please a chosen few, and we know in time lithium batteries and wind power will become obsolete as they burn and fail, yet by then the land ,water and native wildlife will be annihilated all at the hands of a greedy few with their secret agenda of so called climate change.Please before it is too late for your children and grand children do your research and stop this rot.

Conflicts of interest

It is interesting to note that Mr Jason Punch, on the board for Arena is also on the board for the KKT (Karrkad Kanjdji Trust), supposedly a First Nation Trust involved in protecting the wildlife and environment. Oh by the way Arena is part of this project with Tag Energy.

Also of concern is such Philanthropic organizations such as BlackRock and Disney. Groups controlled by the Rothschilds and now going bankrupt.So maybe there should be some checks, balances and research done into the financial side of these projects as it would be such a disaster to commence the work then find no funding available from organizations that support paedophilia, child trafficking and satanic rights.

I would also like to question the conflict of interest in the landowners supposedly on the board.Namely Eric and Brett Lollo.

Evergrande stocks also are plunging with production in China of EV's using lithium batteries known to explode and of course cause fires dispersing toxic fumes into the air.

And then of course there is the incident in Flagstaff, Arizona, where the battery storage facility exploded.One only has to read the report to understand the clear dangers for the community at Mount Fox but seeing as most of you reside in Sydney in your air conditioned corporate facilities it will be no skin off your noses if a volcano comes to life or the environment is decimated and humans are placed in mortal danger.

It is a pity Fukusheima and Chernobyl and yes Flagstaff, Arizona are not enough of a wake up call to those seeking power and the almighty dollar to save what ,the planet ? yourselves ?

Just remember you can not eat a gold coin or dollar note. You need farm land to get quality food and good quality pasture to grow cattle for your steaks and lamb roasts. Underground bunkers don't seem much of an alternative way of viewing the beauty of this world once you have destroyed all that we, the people of our nation love, respect and all too often take for granted …think about it.You have been informed because you see, we do our research.So should you.

Questions

Who owns the property the turbine and battery storage facilities facility goes on?

How much do they get paid?

Are you aware of the ramifications to human health, the environment horticulture, agriculture and native wildlife due to these turbines and facilities being installed.?

Are regulatory health requirements being a pursued?

Is the soil tested where the site is chosen?

Is the public going to be shown the impact studies?

Are all impact studies going to be carried out?

Have voting rights on the building of the turbines and facilities been offered to the community? If not, why not?

How much money does the local council receive from this project?

Is there any conflict of interest in this project?

Does the funding go into safety precautions and environment and agricultural improvements for the area or merely line the pockets of the big boys in their corporate companies?

How will the impact of soil damage be dealt with?

Is any compensation going to put in place for those affected either by land or health and claims made available?

Are they prepared to insure and cover the health and well being of the community?Or are the companies indemnified and protected?

Are you prepared to health screen all people in the local area prior to the project commencing so that on going comparisons and health data can be reviewed and monitored ?

Would you be prepared to risk your life and that of your families to live in the area of this development?

Are you going to compensate all landowners in the area when their property valuations drop or they can not sell up?

Attached for your perusal are numerous articles to back up my statements.

To prevent this information from being hidden from the public eye I have already sent copies on to the local community group and to the First Nations
Warrgamay people.

Written in support of all peoples as supportive custodians to our great land.

Links to Information related to Submission in regards to MCU\0005, RC23\0016, OPW23\0007

https://arena.gov.au/about/board/

https://www.warddeken.org.au/the-kk-trust

https://www.altenergy.com.au/newsandviews/show/tagenergy-joins-mt-fox-development-team

https://www.straitstimes.com/business/china-evergrande-s-ev-unit-says-vice-chairman-detained

https://favershamsociety.org/dangers-associated-with-lithium-ion-battery-energy-storage-systems/

https://safetyskills.com/lithium-batteries/

https://www.dailymail.co.uk/news/article-9775467/UKs-battery-farms-spark-fears-explosions.html

https://greenly.earth/en-us/blog/ecology-news/the-harmful-effects-of-our-lithium-batteries

Right to Know

Hazardous Substance Fact Sheet

Common Name: **LITHIUM**

Synonym: None

Chemical Name: Lithium

Date: November 1999 Revision: June 2008

CAS Number: 7439-93-2

RTK Substance Number: 1119

DOT Number: UN 1415

EMERGENCY RESPONDERS >>>> SEE BACK PAGE

Description and Use

Lithium is a soft, silver to grayish-white (or yellow if exposed to air), odorless metal, crystalline mass or powder. It is used in the manufacture of storage batteries, heat transfer liquids and metal alloys. It is also used as a medication.

Reasons for Citation

- **Lithium** is on the Right to Know Hazardous Substance List because it is cited by DOT and NFPA.
- This chemical is on the Special Health Hazard Substance List.

SEE GLOSSARY ON PAGE 5.

FIRST AID

Eye Contact

- Quickly brush off excess chemical from the face. Immediately flush with large amounts of water for at least 60 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. DO NOT INTERRUPT FLUSHING. Seek medical attention immediately.

Skin Contact

- Quickly remove contaminated clothing. Immediately blot or brush off excess chemical and wash gently with large amounts of water for at least 60 minutes. DO NOT INTERRUPT WASHING. Seek medical attention immediately.

Inhalation

- Remove the person from exposure.
- Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
- Transfer promptly to a medical facility.
- Medical observation is recommended for 24 to 48 hours after overexposure, as pulmonary edema may be delayed.

EMERGENCY NUMBERS

Poison Control: 1-800-222-1222

CHEMTREC: 1-800-424-9300

NJDEP Hotline: 1-877-927-6337

National Response Center: 1-800-424-8802

Hazard Summary

Hazard Rating	NJDOH	NFPA
HEALTH	-	3
FLAMMABILITY	-	2
REACTIVITY	-	2 ~~W~~

COMBUSTIBLE AND REACTIVE
MAY IGNITE SPONTANEOUSLY IN AIR
POISONOUS GASES ARE PRODUCED IN FIRE
CONTAINERS MAY EXPLODE IN FIRE
DO NOT USE WATER

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

- **Lithium** can affect you when inhaled.
- Contact can severely irritate and burn the skin and eyes.
- Inhaling **Lithium** can irritate the nose and throat.
- Inhaling **Lithium** can irritate the lungs. Higher exposures may cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency.
- Exposure to **Lithium** can cause loss of appetite, nausea and vomiting.
- **Lithium** can cause headache, muscle weakness, loss of coordination, confusion, seizures and coma.
- **Lithium** may affect the thyroid gland, kidneys and heart function.
- **Lithium** is REACTIVE and a DANGEROUS EXPLOSION HAZARD.
- **Lithium** is CORROSIVE when in contact with MOISTURE or WATER.

Workplace Exposure Limits

No occupational exposure limits have been established for **Lithium**. However, it may pose a health risk. Always follow safe work practices.

Document Set ID: 2623494
Version: 1, Version Date: 11/01/2024

Determining Your Exposure

- Read the product manufacturer's Material Safety Data Sheet (MSDS) and the label to determine product ingredients and important safety and health information about the product mixture.
- For each individual hazardous ingredient, read the New Jersey Department of Health Hazardous Substance Fact Sheet, available on the RTK website (www.nj.gov/health/eoh/rtkweb) or in your facility's RTK Central File or Hazard Communication Standard file.
- You have a right to this information under the New Jersey Worker and Community Right to Know Act, the Public Employees Occupational Safety and Health (PEOSH) Act if you are a public worker in New Jersey, and under the federal Occupational Safety and Health Act (OSHA) if you are a private worker.
- The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) and the PEOSH Hazard Communication Standard (N.J.A.C. 12:100-7) require employers to provide similar information and training to their employees.

This Fact Sheet is a summary of available information regarding the health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

Health Hazard Information

Acute Health Effects
The following acute (short-term) health effects may occur immediately or shortly after exposure to **Lithium**:

- Contact can severely irritate and burn the skin and eyes.
- Inhaling **Lithium** can irritate the nose and throat.
- Inhaling **Lithium** can irritate the lungs causing coughing and/or shortness of breath. Higher exposures may cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency, with severe shortness of breath.
- Exposure to **Lithium** can cause loss of appetite, nausea, vomiting, diarrhea and abdominal pain.
- **Lithium** can cause headache, muscle weakness, twitching, blurred vision, loss of coordination, tremors, confusion, seizures and coma.

Chronic Health Effects
The following chronic (long-term) health effects can occur at some time after exposure to **Lithium** and can last for months or years:

Cancer Hazard
- According to the information presently available to the New Jersey Department of Health, **Lithium** has not been tested for its ability to cause cancer in animals.

Reproductive Hazard
- While **Lithium** has not been identified as a teratogen or a reproductive hazard, certain *Lithium compounds* have been determined to be teratogens and may also cause reproductive damage. **Lithium** should be handled WITH EXTREME CAUTION.

Other Effects
- High exposure can affect the thyroid gland function resulting in an enlarged thyroid (goiter).
- **Lithium** may affect kidney and heart function.

Medical

Medical Testing
Before beginning employment and at regular times after that, for frequent or potentially high exposures, the following are recommended:

- Blood tests for **Lithium** level
- Kidney function tests
- Thyroid function tests

If symptoms develop or overexposure is suspected, the following are recommended:

- Consider chest x-ray after acute overexposure
- EKG

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures
- Smoking can cause heart disease, lung cancer, emphysema, and other respiratory problems. It may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

Workplace Controls and Practices

Very toxic chemicals, or those that are reproductive hazards or sensitizers, require expert advice on control measures if a less toxic chemical cannot be substituted. Control measures include: (1) enclosing chemical processes for severely irritating and corrosive chemicals, (2) using local exhaust ventilation for chemicals that may be harmful with a single exposure, and (3) using general ventilation to control exposures to skin and eye irritants. For further information on workplace controls, consult the NIOSH document on Control Banding at www.cdc.gov/niosh/topics/ctrlbanding/.

The following work practices are also recommended:

- Label process containers.
- Provide employees with hazard information and training.
- Monitor airborne chemical concentrations.
- Use engineering controls if concentrations exceed recommended exposure levels.
- Provide eye wash fountains and emergency showers.
- Wash or shower if skin comes in contact with a hazardous material.
- Always wash at the end of the workshift.
- Change into clean clothing if clothing becomes contaminated.
- Do not take contaminated clothing home.
- Get special training to wash contaminated clothing.
- Do not eat, smoke, or drink in areas where chemicals are being handled, processed or stored.
- Wash hands carefully before eating, smoking, drinking, applying cosmetics or using the toilet.

In addition, the following may be useful or required:

- Before entering a confined space where **Lithium** may be present, check to make sure that an explosive concentration does not exist.

Personal Protective Equipment

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Gloves and Clothing

- Avoid skin contact with **Lithium**. Wear personal protective equipment made from material which can not be permeated or degraded by this substance. Safety equipment suppliers and manufacturers can provide recommendations on the most protective glove and clothing material for your operation.
- Safety equipment manufacturers recommend Butyl, Nitrile, Neoprene and Silver Shield®/4H® for gloves and DuPont Tyvek®, or the equivalent, as protective material for clothing.
- All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

- Wear eye protection with side shields or goggles.
- Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
- Do not wear contact lenses when working with this substance.

Respiratory Protection

Improper use of respirators is dangerous. Respirators should only be used if the employer has implemented a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

- Where the potential exists for exposure, use a NIOSH approved air-purifying, particulate filter respirator with an N95 filter. More protection is provided by a full facepiece respirator than by a half-mask respirator, and even greater protection is provided by a powered-air purifying respirator.
- Leave the area immediately if (1) while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Lithium**, (2) while wearing particulate filters abnormal resistance to breathing is experienced, or (3) eye irritation occurs while wearing a full facepiece respirator. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
- Consider all potential sources of exposure in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
- Where the potential for high exposure exists, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.

Fire Hazards

If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

- **Lithium** is a COMBUSTIBLE SOLID which is WATER REACTIVE and the *powder* or *dust* may SPONTANEOUSLY IGNITE in AIR.
- Use a Class D, dry sand, Met-L-X powder, graphite, or Lith-X powder as extinguishing agents.
- DO NOT USE WATER, foam, CO_2, or halogenated extinguishing agents.
- POISONOUS GASES ARE PRODUCED IN FIRE, including *Lithium Dioxide* and *Lithium Hydroxide*.
- CONTAINERS MAY EXPLODE IN FIRE.
- Use water spray to keep fire-exposed containers cool.
- DO NOT get water inside containers.
- FIRE MAY RESTART AFTER IT HAS BEEN EXTINGUISHED.

Spills and Emergencies

If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

If **Lithium** is spilled, take the following steps:

- Evacuate personnel and secure and control entrance to the area.
- Eliminate all ignition sources.
- Collect powdered material in the most convenient and safe manner and deposit in sealed containers. May explode in air.
- DO NOT USE WATER OR WET METHOD.
- DO NOT wash into sewer.
- Ventilate and wash area after clean-up is complete.
- Keep **Lithium** out of confined spaces, such as sewers, because of the possibility of an explosion.
- It may be necessary to contain and dispose of **Lithium** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.

Handling and Storage

Prior to working with **Lithium** you should be trained on its proper handling and storage.

- *Finely divided* **Lithium** *particles*, *powder* or *dust* may IGNITE SPONTANEOUSLY in AIR.
- **Lithium** reacts violently with MOISTURE, WATER or STEAM to produce heat and flammable and explosive *Hydrogen gas* and toxic *Lithium Hydroxide*.
- **Lithium** reacts violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); COMBUSTIBLES; HALOGENATED HYDROCARBONS; ALCOHOLS; METALS; METAL ALLOYS; METAL SALTS; STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); REDUCING AGENTS (such as SODIUM, ALUMINUM and their HYDRIDES) and many other substances.
- Store in tightly closed containers in a cool, well-ventilated area.
- Sources of ignition, such as smoking and open flames, are prohibited where **Lithium** is used, handled, or stored.
- Use explosion-proof electrical equipment and fittings wherever **Lithium** is used, handled, manufactured, or stored.
- Use only non-sparking tools and equipment, especially when opening and closing containers of **Lithium**.

Occupational Health Information Resources

The New Jersey Department of Health offers multiple services in occupational health. These services include providing informational resources, educational materials, public presentations, and industrial hygiene and medical investigations and evaluations.

For more information, please contact:

New Jersey Department of Health
Right to Know
PO Box 368
Trenton, NJ 08625-0368
Phone: 609-984-2202
Fax: 609-984-7407
E-mail: rtk@doh.state.nj.us
Web address: http://www.nj.gov/health/eoh/rtkweb

GLOSSARY

ACGIH is the American Conference of Governmental Industrial Hygienists. They publish guidelines called Threshold Limit Values (TLVs) for exposure to workplace chemicals.

Acute Exposure Guideline Levels (AEGLs) are established by the EPA. They describe the risk to humans resulting from once-in-a lifetime, or rare, exposure to airborne chemicals.

Boiling point is the temperature at which a substance can change its physical state from a liquid to a gas.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is unique, identifying number, assigned by the Chemical Abstracts Service, to a specific chemical.

CFR is the Code of Federal Regulations, which are the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes destruction of human skin or severe corrosion of containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

ERG is the Emergency Response Guidebook. It is a guide for emergency responders for transportation emergencies involving hazardous substances.

Emergency Response Planning Guideline (ERPG) values are intended to provide estimates of concentration ranges where one reasonably might anticipate observing adverse effects.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group.

Ionization Potential is the amount of energy needed to remove an electron from an atom or molecule. It is measured in electron volts.

IRIS is the Integrated Risk Information System database maintained by federal EPA. The database contains information on human health effects that may result from exposure to various chemicals in the environment.

LEL or **Lower Explosive Limit**, is the lowest concentration of a combustible substance (gas or vapor) in the air capable of continuing an explosion.

mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the federal Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEOSHA is the New Jersey Public Employees Occupational Safety and Health Act, which adopts and enforces health and safety standards in public workplaces.

Permeated is the movement of chemicals through protective materials.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

UEL or **Upper Explosive Limit** is the highest concentration in air above which there is too much fuel (gas or vapor) to begin a reaction or explosion.

Vapor Density is the ratio of the weight of a given volume of one gas to the weight of another (usually *Hydrogen*), at the same temperature and pressure.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

NJ Health New Jersey Department of Health

Right to Know Hazardous Substance Fact Sheet

Emergency Responders Quick Reference

Common Name: **LITHIUM**

Synonym: None
CAS No: 7439-93-2
Molecular Formula: Li
RTK Substance No: 1119
Description: Soft, silver to grayish-white (or yellow if exposed to air), odorless metal, crystalline mass or powder

HAZARD DATA

Hazard Rating	Firefighting	Reactivity
3 - Health **2 - Fire** **2-~~W~~ - Reactivity** **DOT#:** UN 1415 **ERG Guide #:** 138 **Hazard Class:** 4.3 (Water Reactive/ Dangerous when wet)	**Lithium** is a COMBUSTIBLE SOLID which is WATER REACTIVE and the *powder* or *dust* may SPONTANEOUSLY IGNITE in AIR. Use a Class D, dry sand, Met-L-X powder, graphite, or Lith-X powder as extinguishing agents. DO NOT USE WATER, foam, CO_2, or halogenated extinguishing agents. POISONOUS GASES ARE PRODUCED IN FIRE, including *Lithium Dioxide* and *Lithium Hydroxide*. CONTAINERS MAY EXPLODE IN FIRE. Use water spray to keep fire-exposed containers cool. DO NOT get water inside containers. FIRE MAY RESTART AFTER IT HAS BEEN EXTINGUISHED.	*Finely divided* **Lithium** *particles*, *powder* or *dust* may IGNITE SPONTANEOUSLY in AIR. **Lithium** reacts violently with MOISTURE, WATER or STEAM to produce heat and flammable and explosive *Hydrogen gas* and toxic *Lithium Hydroxide*. **Lithium** reacts violently with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE); COMBUSTIBLES; HALOGENATED HYDROCARBONS; ALCOHOLS; METALS; METAL ALLOYS; METAL SALTS; STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC); REDUCING AGENTS (such as SODIUM, ALUMINUM and their HYDRIDES) and many other substances.

SPILL/LEAKS

Isolation Distance:

Spills: 25 meters (75 feet)

Fire: 800 meters (1/2 mile)

Collect powdered material in the most convenient and safe manner and deposit in sealed containers.

DO NOT USE WATER OR WET METHOD.

DO NOT wash into sewer.

Keep **Lithium** out of confined spaces, such as sewers, because of the possibility of an explosion.

PHYSICAL PROPERTIES

Odor Threshold:	Odorless
Flash Point:	354°F (179°C)
Auto Ignition Temp:	354°F (179°C)
Vapor Pressure:	1 mm Hg at 1,333°F (723°C)
Specific Gravity:	0.53 (water = 1)
Water Solubility:	Reactive
Boiling Point:	2,448°F (1,342°C)
Melting Point:	357°F (181°C)
Molecular Weight:	6.94

EXPOSURE LIMITS

No occupational exposure limits have been established for **Lithium**.

PROTECTIVE EQUIPMENT

Gloves:	Butyl, Nitrile, Neoprene, and Silver Shield®/4H®
Coveralls:	DuPont Tyvek®
Respirator:	Low levels - APR with High efficiency filter

HEALTH EFFECTS

Eyes:	Severe irritation and burns
Skin:	Severe irritation and burns
Inhalation:	Nose, throat and lung irritation with coughing and severe shortness of breath (pulmonary edema) Headache, muscle weakness, confusion and seizures

FIRST AID AND DECONTAMINATION

Remove the person from exposure.
Quickly brush off excess chemical from the face. Immediately flush with large amounts of water for at least 60 minutes, lifting upper and lower lids. Remove contact lenses, if worn, while flushing. DO NOT INTERRUPT FLUSHING. Seek medical attention immediately.
Quickly remove contaminated clothing. Immediately blot or brush off excess chemical and wash gently with large amounts of water for at least 60 minutes. DO NOT INTERRUPT WASHING. Seek medical attention immediately.
Begin artificial respiration if breathing has stopped and CPR if necessary.
Transfer to a medical facility.
Medical observation is recommended as symptoms may be delayed.

June 2008

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New Jersey Department of Health and Senior Services

HAZARDOUS SUBSTANCE FACT SHEET

Common Name: **VANADIUM**

CAS Number: 7440-62-2
DOT Number: None
DOT Hazard Class: None

RTK Substance number: 3762
Date: January 2001 Revision: January 2007

HAZARD SUMMARY

* **Vanadium** can affect you when breathed in.
* Contact can irritate the skin and eyes.
* Breathing **Vanadium** can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* High exposure to **Vanadium** can cause nausea, vomiting, abdominal pain and greenish discoloration of the tongue.
* Exposure to **Vanadium** can cause headache, tremors and dizziness.
* **Vanadium** may cause an asthma-like allergy. Future exposure can cause asthma attacks with shortness of breath, wheezing, cough, and/or chest tightness.
* **Vanadium** may damage the kidneys.
* Repeated high exposure may cause anemia.

IDENTIFICATION

Vanadium is a gray or white, shiny powder or solid metal. It is used to make steel alloys, other **Vanadium** compounds, x-ray equipment, *Sulfuric Acid*, and synthetic rubber.

REASON FOR CITATION

* **Vanadium** is on the Hazardous Substance List because it is cited by NIOSH, DEP and EPA.
* Definitions are provided on page 5.

HOW TO DETERMINE IF YOU ARE BEING EXPOSED

The New Jersey Right to Know Act requires most employers to label chemicals in the workplace and requires public employers to provide their employees with information and training concerning chemical hazards and controls. The federal OSHA Hazard Communication Standard (29 CFR 1910.1200) requires private employers to provide similar training and information to their employees.

* Exposure to hazardous substances should be routinely evaluated. This may include collecting personal and area air samples. You can obtain copies of sampling results from your employer. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).
* If you think you are experiencing any work-related health problems, see a doctor trained to recognize occupational diseases. Take this Fact Sheet with you.

WORKPLACE EXPOSURE LIMITS

NIOSH: The recommended airborne exposure limit is **0.05 mg/m^3** (as **Vanadium** *dust*), which should not be exceeded at any time.

WAYS OF REDUCING EXPOSURE

* Where possible, enclose operations and use local exhaust ventilation at the site of chemical release. If local exhaust ventilation or enclosure is not used, respirators should be worn.
* Wear protective work clothing.
* Wash thoroughly immediately after exposure to **Vanadium** and at the end of the workshift.
* Post hazard and warning information in the work area. In addition, as part of an ongoing education and training effort, communicate all information on the health and safety hazards of **Vanadium** to potentially exposed workers.

This Fact Sheet is a summary source of information of all potential and most severe health hazards that may result from exposure. Duration of exposure, concentration of the substance and other factors will affect your susceptibility to any of the potential effects described below.

HEALTH HAZARD INFORMATION

Acute Health Effects

The following acute (short-term) health effects may occur immediately or shortly after exposure to **Vanadium**:

* Contact can irritate the skin and eyes.
* Breathing **Vanadium** can irritate the nose, throat and lungs causing coughing, wheezing and/or shortness of breath.
* High exposure to **Vanadium** can cause nausea, vomiting, abdominal pain and greenish discoloration of the tongue.
* Exposure to **Vanadium** can cause headache, tremors and dizziness.

Chronic Health Effects

The following chronic (long-term) health effects can occur at some time after exposure to **Vanadium** and can last for months or years:

Cancer Hazard

* According to the information presently available to the New Jersey Department of Health and Senior Services, **Vanadium** has not been tested for its ability to cause cancer in animals.

Reproductive Hazard

* There is limited evidence that **Vanadium** *compounds* may damage the male reproductive system in animals.

Other Long-Term Effects

* **Vanadium** can irritate the lungs. Repeated exposure may cause bronchitis to develop with cough, phlegm, and/or shortness of breath.
* **Vanadium** may cause an asthma-like allergy. Future exposure can cause asthma attacks with shortness of breath, wheezing, cough, and/or chest tightness.
* **Vanadium** may damage the kidneys.
* Repeated high exposure may cause anemia.

MEDICAL

Medical Testing

Before beginning employment and at regular times after that, for those with frequent or potentially high exposures, the following are recommended:

* Lung function tests. These may be normal if the person is not having an attack at the time of the test.

If symptoms develop or overexposure is suspected, the following are recommended:

* Complete blood count
* Kidney function tests
* Urine test for **Vanadium**

Any evaluation should include a careful history of past and present symptoms with an exam. Medical tests that look for damage already done are not a substitute for controlling exposure.

Request copies of your medical testing. You have a legal right to this information under the OSHA Access to Employee Exposure and Medical Records Standard (29 CFR 1910.1020).

Mixed Exposures

* Because smoking can cause heart disease, as well as lung cancer, emphysema, and other respiratory problems, it may worsen respiratory conditions caused by chemical exposure. Even if you have smoked for a long time, stopping now will reduce your risk of developing health problems.

WORKPLACE CONTROLS AND PRACTICES

Unless a less toxic chemical can be substituted for a hazardous substance, **ENGINEERING CONTROLS** are the most effective way of reducing exposure. The best protection is to enclose operations and/or provide local exhaust ventilation at the site of chemical release. Isolating operations can also reduce exposure. Using respirators or protective equipment is less effective than the controls mentioned above, but is sometimes necessary.

In evaluating the controls present in your workplace, consider: (1) how hazardous the substance is, (2) how much of the substance is released into the workplace and (3) whether harmful skin or eye contact could occur. Special controls should be in place for highly toxic chemicals or when significant skin, eye, or breathing exposures are possible.

In addition, the following control is recommended:

* Where possible, automatically transfer **Vanadium** from drums or other storage containers to process containers.

Good **WORK PRACTICES** can help to reduce hazardous exposures. The following work practices are recommended:

* Workers whose clothing has been contaminated by **Vanadium** should change into clean clothing promptly.
* Do not take contaminated work clothes home. Family members could be exposed.
* Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to **Vanadium**.
* Eye wash fountains should be provided in the immediate work area for emergency use.

* If there is the possibility of skin exposure, emergency shower facilities should be provided.
* On skin contact with **Vanadium**, immediately wash or shower to remove the chemical. At the end of the workshift, wash any areas of the body that may have contacted **Vanadium**, whether or not known skin contact has occurred.
* Do not eat, smoke, or drink where **Vanadium** is handled, processed, or stored, since the chemical can be swallowed. Wash hands carefully before eating, drinking, applying cosmetics, smoking, or using the toilet.
* Use a vacuum or a wet method to reduce dust during clean-up. DO NOT DRY SWEEP.

PERSONAL PROTECTIVE EQUIPMENT

WORKPLACE CONTROLS ARE BETTER THAN PERSONAL PROTECTIVE EQUIPMENT. However, for some jobs (such as outside work, confined space entry, jobs done only once in a while, or jobs done while workplace controls are being installed), personal protective equipment may be appropriate.

The OSHA Personal Protective Equipment Standard (29 CFR 1910.132) requires employers to determine the appropriate personal protective equipment for each hazard and to train employees on how and when to use protective equipment.

The following recommendations are only guidelines and may not apply to every situation.

Clothing

* Avoid skin contact with **Vanadium**. Wear protective gloves and clothing. Safety equipment suppliers/ manufacturers can provide recommendations on the most protective glove/clothing material for your operation.
* All protective clothing (suits, gloves, footwear, headgear) should be clean, available each day, and put on before work.

Eye Protection

* Wear impact resistant eye protection with side shields or goggles.
* Wear a face shield along with goggles when working with corrosive, highly irritating or toxic substances.
* Contact lenses should not be worn when working with this substance.

Respiratory Protection

IMPROPER USE OF RESPIRATORS IS DANGEROUS. Such equipment should only be used if the employer has a written program that takes into account workplace conditions, requirements for worker training, respirator fit testing, and medical exams, as described in the OSHA Respiratory Protection Standard (29 CFR 1910.134).

* NIOSH has established new testing and certification requirements for negative pressure, air purifying, particulate filter and filtering facepiece respirators. The filter classifications of dust/mist/fume, paint spray or pesticide prefilters, and filters for radon daughters, have been replaced with the N, R, and P series. Each series has three levels of filtering efficiency: 95%, 99%, and 99.9%. Check with your safety equipment supplier or your respirator manufacturer to determine which respirator is appropriate for your facility.
* Where the potential exists for exposure over **0.5 mg/m^3**, use a NIOSH approved full facepiece respirator with a high efficiency particulate filter. Increased protection is obtained from full facepiece powered-air purifying respirators.
* If while wearing a filter or cartridge respirator you can smell, taste, or otherwise detect **Vanadium**, or if while wearing particulate filters abnormal resistance to breathing is experienced, or eye irritation occurs while wearing a full facepiece respirator, leave the area immediately. Check to make sure the respirator-to-face seal is still good. If it is, replace the filter or cartridge. If the seal is no longer good, you may need a new respirator.
* Be sure to consider all potential exposures in your workplace. You may need a combination of filters, prefilters or cartridges to protect against different forms of a chemical (such as vapor and mist) or against a mixture of chemicals.
* Where the potential exists for exposure over **1.25 mg/m^3**, use a NIOSH approved supplied-air respirator with a full facepiece operated in a pressure-demand or other positive-pressure mode. For increased protection use in combination with an auxiliary self-contained breathing apparatus operated in a pressure-demand or other positive-pressure mode.
* Exposure to **35 mg/m^3** is immediately dangerous to life and health. If the possibility of exposure above **35 mg/m^3** exists, use a NIOSH approved self-contained breathing apparatus with a full facepiece operated in a pressure-demand or other positive-pressure mode equipped with an emergency escape air cylinder.

QUESTIONS AND ANSWERS

Q: If I have acute health effects, will I later get chronic health effects?

A: Not always. Most chronic (long-term) effects result from repeated exposures to a chemical.

Q: Can I get long-term effects without ever having short-term effects?

A: Yes, because long-term effects can occur from repeated exposures to a chemical at levels not high enough to make you immediately sick.

Q: What are my chances of getting sick when I have been exposed to chemicals?
A: The likelihood of becoming sick from chemicals is increased as the amount of exposure increases. This is determined by the length of time and the amount of material to which someone is exposed.

Q: When are higher exposures more likely?
A: Conditions which increase risk of exposure include dust releasing operations (grinding, mixing, blasting, dumping, etc.), other physical and mechanical processes (heating, pouring, spraying, spills and evaporation from large surface areas such as open containers), and "confined space" exposures (working inside vats, reactors, boilers, small rooms, etc.).

Q: Is the risk of getting sick higher for workers than for community residents?
A: Yes. Exposures in the community, except possibly in cases of fires or spills, are usually much lower than those found in the workplace. However, people in the community may be exposed to contaminated water as well as to chemicals in the air over long periods. This may be a problem for children or people who are already ill.

Q: Can men as well as women be affected by chemicals that cause reproductive system damage?
A: Yes. Some chemicals reduce potency or fertility in both men and women. Some damage sperm and eggs, possibly leading to birth defects.

Q: Who is at the greatest risk from reproductive hazards?
A: Pregnant women are at greatest risk from chemicals that harm the developing fetus. However, chemicals may affect the ability to have children, so both men and women of childbearing age are at high risk.

The following information is available from:

New Jersey Department of Health and Senior Services
Occupational Health Service
PO Box 360
Trenton, NJ 08625-0360
(609) 984-1863
(609) 984-7407 (fax)

Web address: http://www.state.nj.us/health/eoh/odisweb/

Industrial Hygiene Information

Industrial hygienists are available to answer your questions regarding the control of chemical exposures using exhaust ventilation, special work practices, good housekeeping, good hygiene practices, and personal protective equipment including respirators. In addition, they can help to interpret the results of industrial hygiene survey data.

Medical Evaluation

If you think you are becoming sick because of exposure to chemicals at your workplace, you may call personnel at the Department of Health and Senior Services, Occupational Health Service, who can help you find the information you need.

Public Presentations

Presentations and educational programs on occupational health or the Right to Know Act can be organized for labor unions, trade associations and other groups.

Right to Know Information Resources

The Right to Know Infoline (609) 984-2202 can answer questions about the identity and potential health effects of chemicals, list of educational materials in occupational health, references used to prepare the Fact Sheets, preparation of the Right to Know Survey, education and training programs, labeling requirements, and general information regarding the Right to Know Act. Violations of the law should be reported to (609) 984-2202.

DEFINITIONS

ACGIH is the American Conference of Governmental Industrial Hygienists. It recommends upper limits (called TLVs) for exposure to workplace chemicals.

A **carcinogen** is a substance that causes cancer.

The **CAS number** is assigned by the Chemical Abstracts Service to identify a specific chemical.

CFR is the Code of Federal Regulations, which consists of the regulations of the United States government.

A **combustible** substance is a solid, liquid or gas that will burn.

A **corrosive** substance is a gas, liquid or solid that causes irreversible damage to human tissue or containers.

DEP is the New Jersey Department of Environmental Protection.

DOT is the Department of Transportation, the federal agency that regulates the transportation of chemicals.

EPA is the Environmental Protection Agency, the federal agency responsible for regulating environmental hazards.

A **fetus** is an unborn human or animal.

A **flammable** substance is a solid, liquid, vapor or gas that will ignite easily and burn rapidly.

The **flash point** is the temperature at which a liquid or solid gives off vapor that can form a flammable mixture with air.

IARC is the International Agency for Research on Cancer, a scientific group that classifies chemicals according to their cancer-causing potential.

IRIS is the Integrated Risk Information System database of the federal EPA.

A **miscible** substance is a liquid or gas that will evenly dissolve in another.

mg/m^3 means milligrams of a chemical in a cubic meter of air. It is a measure of concentration (weight/volume).

A **mutagen** is a substance that causes mutations. A **mutation** is a change in the genetic material in a body cell. Mutations can lead to birth defects, miscarriages, or cancer.

NAERG is the North American Emergency Response Guidebook. It was jointly developed by Transport Canada, the United States Department of Transportation and the Secretariat of Communications and Transportation of Mexico. It is a guide for first responders to quickly identify the specific or generic hazards of material involved in a transportation incident, and to protect themselves and the general public during the initial response phase of the incident.

NFPA is the National Fire Protection Association. It classifies substances according to their fire and explosion hazard.

NIOSH is the National Institute for Occupational Safety and Health. It tests equipment, evaluates and approves respirators, conducts studies of workplace hazards, and proposes standards to OSHA.

NTP is the National Toxicology Program which tests chemicals and reviews evidence for cancer.

OSHA is the Occupational Safety and Health Administration, which adopts and enforces health and safety standards.

PEL is the Permissible Exposure Limit which is enforceable by the Occupational Safety and Health Administration.

PIH is a DOT designation for chemicals which are Poison Inhalation Hazards.

ppm means parts of a substance per million parts of air. It is a measure of concentration by volume in air.

A **reactive** substance is a solid, liquid or gas that releases energy under certain conditions.

STEL is a Short Term Exposure Limit which is usually a 15-minute exposure that should not be exceeded at any time during a work day.

A **teratogen** is a substance that causes birth defects by damaging the fetus.

TLV is the Threshold Limit Value, the workplace exposure limit recommended by ACGIH.

The **vapor pressure** is a measure of how readily a liquid or a solid mixes with air at its surface. A higher vapor pressure indicates a higher concentration of the substance in air and therefore increases the likelihood of breathing it in.

>>>>>>>>>>>>>>>>> EMERGENCY INFORMATION <<<<<<<<<<<<<<<<<

Common Name: **VANADIUM**
DOT Number: **None**
DOT Hazard Class: **None**
NAERG Code: **No Citation**
CAS Number: **7440-62-2**

Hazard rating	NJDHSS	NFPA
FLAMMABILITY	0	-
REACTIVITY	0	-
POISONOUS FUMES ARE PRODUCED IN FIRE		

Hazard Rating Key: 0=minimal; 1=slight; 2=moderate; 3=serious; 4=severe

FIRE HAZARDS

* Extinguish fire using an agent suitable for type of surrounding fire. **Vanadium** itself does not burn.
* POISONOUS FUMES ARE PRODUCED IN FIRE, including *Vanadium Oxide.*
* Use water spray to keep fire-exposed containers cool.
* If employees are expected to fight fires, they must be trained and equipped as stated in the OSHA Fire Brigades Standard (29 CFR 1910.156).

SPILLS AND EMERGENCIES

If **Vanadium** is spilled, take the following steps:

* Evacuate personnel and secure and control entrance to the area.
* Collect powdered material in the most convenient and safe manner and deposit in sealed containers.
* Ventilate and wash area after clean-up is complete.
* It may be necessary to contain and dispose of **Vanadium** as a HAZARDOUS WASTE. Contact your state Department of Environmental Protection (DEP) or your regional office of the federal Environmental Protection Agency (EPA) for specific recommendations.
* If employees are required to clean-up spills, they must be properly trained and equipped. The OSHA Hazardous Waste Operations and Emergency Response Standard (29 CFR 1910.120) may apply.

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FOR LARGE SPILLS AND FIRES immediately call your fire department. You can request emergency information from the following:

CHEMTREC: (800) 424-9300
NJDEP HOTLINE: 1-877-WARN-DEP

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HANDLING AND STORAGE

* Prior to working with **Vanadium** you should be trained on its proper handling and storage.
* **Vanadium** must be stored to avoid contact with OXIDIZING AGENTS (such as PERCHLORATES, PEROXIDES, PERMANGANATES, CHLORATES, NITRATES, CHLORINE, BROMINE and FLUORINE) and LITHIUM since violent reactions occur.
* **Vanadium** is not compatible with STRONG ACIDS (such as HYDROCHLORIC, SULFURIC and NITRIC) and ALKALI METALS.
* Store in tightly closed containers in a cool, well-ventilated area away from HEAT.

FIRST AID

For POISON INFORMATION call 1-800-222-1222

Eye Contact

* Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting upper and lower lids.

Skin Contact

* Quickly remove contaminated clothing. Immediately wash contaminated skin with large amounts of soap and water.

Breathing

* Remove the person from exposure.
* Begin rescue breathing (using universal precautions) if breathing has stopped and CPR if heart action has stopped.
* Transfer promptly to a medical facility.

PHYSICAL DATA

Vapor Pressure: 0 mm Hg at 68^{o}F (20^{o}C)
Water Solubility: Insoluble

OTHER COMMONLY USED NAMES

Chemical Name:

Vanadium

NEW JERSEY DEPARTMENT OF HEALTH AND
SENIOR SERVICES
Right to Know Program
PO Box 368, Trenton, NJ 08625-0368
(609) 984-2202
