

ASSIST INFORMATION SHEET:

Safe handling and use of potting mix

Students and/or staff in schools use potting mix as a nutrient rich growth media for plants. Potting mix is readily available from garden supply centres and horticultural nurseries or it can be prepared onsite using recycled organic products. Health concerns have been raised in the past, with gardeners contracting Legionnaires' disease. Other disease causing microorganisms may also be present in potting mix.

Ingredients of potting mix

There are many different commercially available potting mixes that are suitable for growing different plants. Manufacturers often source the ingredients locally so composition will differ from brand to brand, and location to location.

Composition of potting mix may include, but is not limited to:

- Peat
- Sand
- Perlite
- Vermiculite
- Zeolite
- Sawdust
- Wood chips
- Pine bark
- Plant mulch
- Top soil
- Wood dust
- Organic compounds or manure
- Mushroom compost
- A variety of non-specific living microorganisms including bacteria, fungi, protozoa
- Chicken manure
- Mineral fertilisers
- Wetting agent

It is important to obtain a current Safety Data Sheet (SDS) for the particular brand of potting mix you are using before starting work. A third party SDS can be used as supplementary information. See Science ASSIST answer to question on [Third party Safety Data Sheets \(SDSs\)](#)

Good quality potting mixes carry an Australian Standards Mark set of ticks. These potting mixes have been tested for drainage, water retention, water absorption, nutrients and pH. Premium potting mixes have a red tick and are suitable for long-term plants that require a better quality growth medium. Black ticks show regular standard potting mix suitable for short-term plantings such as annuals.¹

PPE and safe handling and storage of potting mixes

The following precautions should be followed when using potting mix:

1. Read the warning on the bagged potting mix: *This product contains microorganisms.*
2. Always wear gloves. Standard duty gloves ([AS/NZS 2161.1](#)) are suitable.
3. Open the potting mix bag slowly and make sure that the opening is not directed towards your face.

4. Avoid generating and inhaling dust or mists from the potting mix. This can be avoided by ensuring it is kept damp while in use.

Non-fogging dust resistant goggles or safety glasses (AS/NZS 1336:2014) can be worn if there is a risk of dust and/or liquid mist (bio-aerosols) getting into the eyes. If there is a risk of inhalation, wear a suitable particulate respirator (AS/NZS 1715 and 1716)²

If working with potting mixes indoors or in greenhouses make sure that adequate ventilation is provided.

5. Wash hands thoroughly with soap after use.

Potting mix is considered to be stable when stored under conditions recommended by the manufacturer. Potting mix should be stored in the closed, original container in a dry, cool (15–25°C), well-ventilated area out of direct sunlight.³ Potting mix bags kept in direct sunlight can reach temperatures within the bag that become ideal for rapid growth of *Legionella* bacteria⁴.

Under certain conditions such as direct sunlight, the rate of chemical breakdown may increase. Decomposition products such as ammonia, oxides of carbon, oxides of phosphorus and oxides of sulphur⁵ may be present in minute quantities.

Diseases that can be contracted from potting mix

Legionnaire's disease

Legionnaire's disease is caused by gram-negative bacilli from the *Legionella* species. *Legionella* are generally acquired through inhalation of contaminated aerosols of water or of dust.⁶ *Legionella longbeachae* often colonises potting mix and can be inhaled into the body when using potting mix, garden soils, mulch and compost causing lung infection or pneumonia.⁷ There is a 2–10 day incubation period for Legionnaires' disease.⁸ There is no direct human-to-human transmission.

A number of risk factors may increase the chance of developing Legionnaire's disease. These include:

- being above 50 years of age
- being a smoker
- being chronically ill
- having an impaired immune system
- taking steroid drugs.⁹

Few people who come in contact with *Legionella* bacteria actually develop the disease¹⁰. Children, pregnant women, the elderly, people with pre-existing conditions or immune-compromised people may be at particular risk of illness if exposed to potting mix. Healthy individuals are also known to develop disease from potting mix. School staff who have an increased risk, should ensure they carefully follow all prevention methods. All staff and students should seek medical advice immediately if they experience the following flu-like symptoms after working with potting mix:

- Headache
- Muscle aches
- Tiredness
- Chills
- Dry cough
- Shortness of breath

- Loss of appetite¹¹
- Stomach pain and diarrhoea
- Sudden high temperature or fever

Pontiac fever

A milder infection than Legionnaire's disease, Pontiac fever has the symptoms of fever, chills, headache, malaise and muscle pain. These may be noticed between a few hours to 3 days after being exposed to the bacteria and last less than a week.¹² Pontiac fever has not been reported in Australia.¹³

Tetanus

Tetanus is a disease caused by a toxin of the bacteria *Clostridium tetani*, which affects the nervous system and often enters the body through minor puncture wounds or scratches.

Symptoms include muscle pain, difficulty swallowing, muscle spasms, convulsions and breathing difficulties. Further complications can include respiratory failure and cardiac arrest.

The bacteria can be found in soil, dust and manures. Tetanus can be prevented through immunisation. Gloves, sturdy shoes and long clothes should also be worn when exposed to potting mix and soil, as this will lessen the chance of wounds. Hands should be cleaned with soap and water after handling potting mix and soil.¹⁴

¹ 'Choosing the right Potting Mix', Yates website, <http://www.yates.com.au/gardening/tips/choosing-the-right-pottingmix#aXI0Mh5wdwbU9LwX.97> (Accessed January 2017)

² Yates. 2012. *General Potting Mix Safety Data Sheet*, Yates website, <https://go.lupinsys.com/duluxgroup/harms/public/materials/35f7010af1be44e6a8669efe41dc94b8-published/individual> (Accessed January 2017)

³ Yates, ibid.

⁴ 'Dangers of Potting mixes', Daylilies in Australia website, <https://www.dayliliesinaustralia.com.au/dangers-of-potting-mixes/> (Accessed January 2017)

⁵ Yates, ibid.

⁶ 'Legionellosis (Legionnaires' disease)', Health.vic website, <https://www2.health.vic.gov.au/public-health/infectious-diseases/disease-information-advice/legionellosis-legionnaires-disease> (Accessed January 2017)

⁷ Daylilies in Australia. ibid.

⁸ Health.vic, ibid.

⁹ Daylilies in Australia, ibid.

¹⁰ Daylilies in Australia. ibid.

¹¹ Daylilies in Australia. ibid.

¹² 'Legionella (Legionnaires' Disease and Pontiac Fever)', Centers for Disease Control and Prevention website <http://www.cdc.gov/legionella/about/signs-symptoms.html> (Accessed January 2017)

¹³ Health.vic, ibid.

¹⁴ 'Microorganisms', Plant Safely website, <http://www.plantsafely.com.au/living-organisms/microorganisms/> (Accessed January 2017)

Grow Better. 2013. *Grow Better Premium Potting Mix Safety Data Handling Sheet*. Grow Better website, http://www.growbetter.com.au/msds/msds_pm_premium_potting_mix.pdf (Accessed January 2017)

NSW Department of Health. *NSW Code of Practice for the Control of Legionnaires' Disease 2004. 2nd Edition*, Health NSW website, <http://www.health.nsw.gov.au/environment/Publications/legionnaires-disease.pdf> (Accessed January 2017)

Scotts. 2015. *Osmocote Professional Potting Mix Safety Data Sheet*. Scotts website, <https://www.scottsaustralia.com.au/media/1942/osmocote-professional-potting-mix-range-v2-0815.pdf> (Accessed January 2017)