

Why Will The NorthConnex Tunnel Design Cause Serious Health Impacts?

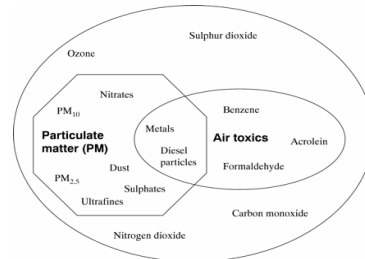
The NorthConnex tunnel connecting the M2 to M1 freeways has been proposed to reduce congestion by removing heavy freight trucks from Pennant Hills Rd. Whilst this initiative is a positive step for infrastructure in NSW, the **DESIGN** of the tunnel poses serious risks to health for two groups a) tunnel users and b) the communities living, working and schooling around the ventilation stacks.

Pollution from NorthConnex Ventilation Stacks and inside the tunnel:

NorthConnex is unique because large numbers of heavy freight trucks will use it. Heavy freight vehicles have diesel engines. Emissions from diesel engines are a toxic mix of both organic gases and particles that harm human health. These toxins are shown in this figure:

1. The vapor gases and particles from diesel engines have been classified as cancer causing by the World Health Organization.

The pollution stream from the NorthConnex stacks will therefore contain high levels of cancer causing toxins.



2. The NorthConnex tunnel is currently designed so that 9 km of predominantly diesel emissions will be trapped inside the tunnel and discharged only via two stacks at the tunnel ends. There is no alternative structure to ventilate the tunnel along its length. At present, these emissions are dispersed along the entire length of Pennant Hills Rd.
3. The two stacks will release concentrated emissions, and as they have been placed in the center of densely populated residential communities in Sydney, will expose these communities to high levels of pollution.
4. The volume of discharge from the stacks is **equivalent to an Olympic Swimming pool every 3 seconds** – as the tunnel is very long, the amounts of pollutants that will build up inside the tunnel will be extremely high.

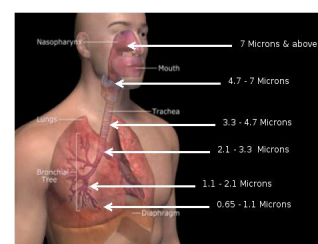
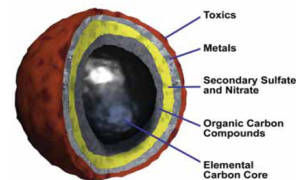
Health Impacts from the NorthConnex tunnel design:

1. The health impacts on tunnel users result from the build up of pollutants to levels deemed by peak medical bodies as hazardous to health, as the driver traverses through the length of the tunnel. These high levels are shown in the modeling done by the proponent Transurban in their Environmental Impact Statement.
2. The health impacts on communities result because the stacks are low in height - the pollution will not reach the atmospheric winds to be blown away. The stacks at both ends are in deep valleys – again a location for the pollution to stagnate. The residential areas are also often still with little wind. The stacks have no filtration. **Unfiltered emissions will therefore remain on communities at ground levels.**

There are 17,000 school children in these communities attending established schools and pre-schools – hence generations of school children will breathe pollutants.

Children are more vulnerable because they breathe faster, inhale more air toxins, and have growing lung tissue. Research has confirmed respiratory problems such as asthma, and permanent reductions in lung growth – leading to life-long disability. An 18 year old will have the lungs of a 12-year-old child. **These effects are similar to smoking cigarettes.**

1. Of note, particles from diesel emissions are small in diameter (ultrafine microns) and once these are breathed in, they deposit in lungs permanently and enter the blood circulation. **This causes immediate and long-term disease - asbestos like lung disease, and immediate blood clotting causing heart attacks and strokes.** The health effects of particles are confirmed in a vast body of medical literature. More research is being undertaken and the evidence of health impacts on other populations, such as pregnant women is highly concerning.
2. Particulate matter of small diameter is lethal. It is not a matter of if there will be deaths as a result of the proposed tunnel but when and how many. Our national environmental protection measures recently issued a directive that there is **NO SAFE LIMIT** for human exposure to small particulate matter. Particles from diesel engines are different to



background sources as they contain a carbon core and heavy metals like lead and arsenic.

Flaws in the NorthConnex modeling as per the Environmental Impact Statement:

The modeling by Transurban for approval of this project states the risks to health are negligible – however **this modeling has a number of serious flaws** as highlighted in the submissions by the NSW Department of Health (DOH) and the NSW Environment Protection Authority (EPA).

The flaws combine to underestimate the volumes of diesel emissions by NorthConnex and hence underestimate the health effects. Some key flaws include:

1. Assumptions regarding local wind have been derived from weather stations some distances away from the stack such as the airport and Prospect – these assumptions do not reflect actual winds at stack sites, and have been questioned by the EPA. In addition, no modeling has been done to account for local topography in the valleys.
2. For there to be dispersion from a stack it must be located in an open area where it has access to prevailing winds. NorthConnex's own expert said at a public forum conditions for poor dispersion occurs when stacks are located in valleys and where there is little wind.
3. The in-tunnel pollution levels presented in the EIS are based on invalid assumptions about traffic numbers (too low), vehicle speeds (too high), vehicle mix (too few trucks) and average heavy vehicle weight (far too low). The impact on the amount of emissions of each factor is significant as questioned by the Department of Health.
4. The EIS does not take into account the speed of traffic during periods of extreme congestion when in-tunnel pollutant levels will reach hazardous levels for acute cardiac events and asthma.

Key Messages:

The government, private developers, and responsible agencies will face the risk of **legal action when asbestos like illness**, long-term disabilities in children, and other health impacts occur in communities and tunnel users as a result of the flawed tunnel design for NorthConnex. The cheapest solution of just two stacks for a 9km long tunnel will result in a dangerous tunnel for the people of Australia.

Viable alternatives used in world class infrastructure are available and must be considered. These include:

- Transverse ventilation along the tunnel length / multiple air exchange facilities
- Placement of stacks in non-residential areas at a height to ensure dispersion by winds
- Filtration of emissions – if installed and operated correctly filtration is 95% effective

The medical community strongly urges that design changes be made to NorthConnex to ensure health is protected.

What could be more important to every Australian than their health?

The tunnel design is short-sighted – lets move towards a safer vision for infrastructure, job creation and keeping Sydney moving.

What should be done:

1. Responsible bodies should conduct a full credible and independent evaluation of the flaws raised herein.
2. The tunnel should undergo design changes to ensure the safety and health of all members of the public affected by NorthConnex.