



SCIENCE AND
INDUSTRY
ENDOWMENT
FUND



LIVERPOOL
CITY
COUNCIL

STEM Community Partnerships Program

Liverpool local scenario

Air Quality

The quality of the air impacts our community. With increasing levels of particles from dust storms, bush fires and human activities, changing gas emissions from transport, industry and agriculture, there is a greater risk of respiratory and cardiopulmonary problems.

In the last few years, we have seen the impact of dust from drought affected fields and the bushfires decreasing the air quality and health of people in the Liverpool region. As part of the NSW bushfire season 2019-20, Sydney's South-West saw 61 per cent of days where the air quality was below reporting standards. Pollution may consist of smoke, dirt, pollen, mould and other small particles which are taken in by the lungs and then can impact the functioning of the body. Climatic changes also increase the creation and dispersal of these pollutants. As our population grows and gets older, we may see an increase in asthma, stroke and cardiac disease.

In 2015, Australian Environment Ministers established the National Clean Air Agreement to assist governments to create action plans that address air quality issues. State governments have responsibility for monitoring and managing the air quality in their jurisdictions while local governments respond to local air pollution issues. Recent research highlights the need for increased stakeholder engagement in improving air quality and raising public awareness of the issue. In 2021, a draft NSW Clean Air Strategy was released to consider ways to reduce the adverse impacts of air pollution on the community.

Solutions to reduce the amounts of pollutants released into and carried by the air are needed. There are also other solutions required for the many aspects of this problem, including in relation to the impacts of poor air quality on the environment and community.

Liverpool City Council has the challenge to ensure they provide the relevant services and activities to cater for this problem.



<https://www.liverpoolchampion.com.au/story/1884408/air-alert-pollution-link-to-cancer/>

Your task

Your task is to use the information above and resources provided below as a start to identify a local problem and design a STEM-focused solution.

(Question, Design, Explore, Communicate)

Resources

CSIRO research

- 'Breathing the quality air down under' ECOS Issue 228, March 2017
<https://ecos.csiro.au/breathing-air-quality-down-under/>
- Atmospheric Composition & Quality <https://research.csiro.au/acc/research-themes/air-quality/>
- Air quality: how we're minimising smoke impact, January 2020 <https://blog.csiro.au/air-quality-how-were-minimising-smoke-impact/>
- 'Citizen Science to aid bushfire recovery', April 2020 <https://www.csiro.au/en/News/News-releases/2020/Citizen-science-to-aid-bushfire-recovery>
- Atmospheric monitoring and modelling - Oz Flux link
<https://www.csiro.au/en/research/natural-environment/atmosphere/Atmospheric-monitoring-modelling>

Reports

- NSW Department of Planning, Industry and Environment Research
<https://www.environment.nsw.gov.au/topics/air/research/air-quality-in-nsw>
<https://www.environment.nsw.gov.au/topics/air/clean-air-strategy>
<https://www.environment.nsw.gov.au/research-and-publications/publications-search/dustwatch-report-december-2020>
<https://www.environment.nsw.gov.au/topics/air/monitoring-air-quality/review/nsw-air-quality-monitoring-plan>
<https://www.environment.nsw.gov.au/research-and-publications/publications-search/emergency-air-quality-monitoring-in-response-to-bushfires>
<https://www.environment.nsw.gov.au/topics/air/nsw-air-quality-statements/air-quality-special-statement-spring-summer-2019-20>
- National Clean Air Agreement, Department of Agriculture, Water and the Environment
<https://www.environment.gov.au/protection/air-quality/publications/national-clean-air-agreement>

Articles and Other Resources

- Liverpool Sydney South-west Air Pollution: Real-time Air Quality Index (AQI)
<https://aqicn.org/city/australia/nsw/liverpool/sydney-south-west/>
- 'Invisible killer': Air pollution levels spike in Sydney's west, Sydney Morning Herald, April 2019
<https://www.smh.com.au/environment/sustainability/invisible-killer-air-pollution-levels-spike-in-sydney-s-west-20190412-p51dpa.html>