



Health

Hunter New England
Local Health District

Narrabri Gas Project Community Consultative Committee 17th July 2018

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Hunter New England Population Health





- Connect with CCC
- Understand your Concerns
- How can NSW Health Support the CCC?

If you want, I can tell you about:

- Our approach to assessment of health risk
- Emissions we focus on in assessment and their potential health risk



Our Approach to Health Risk Assessment



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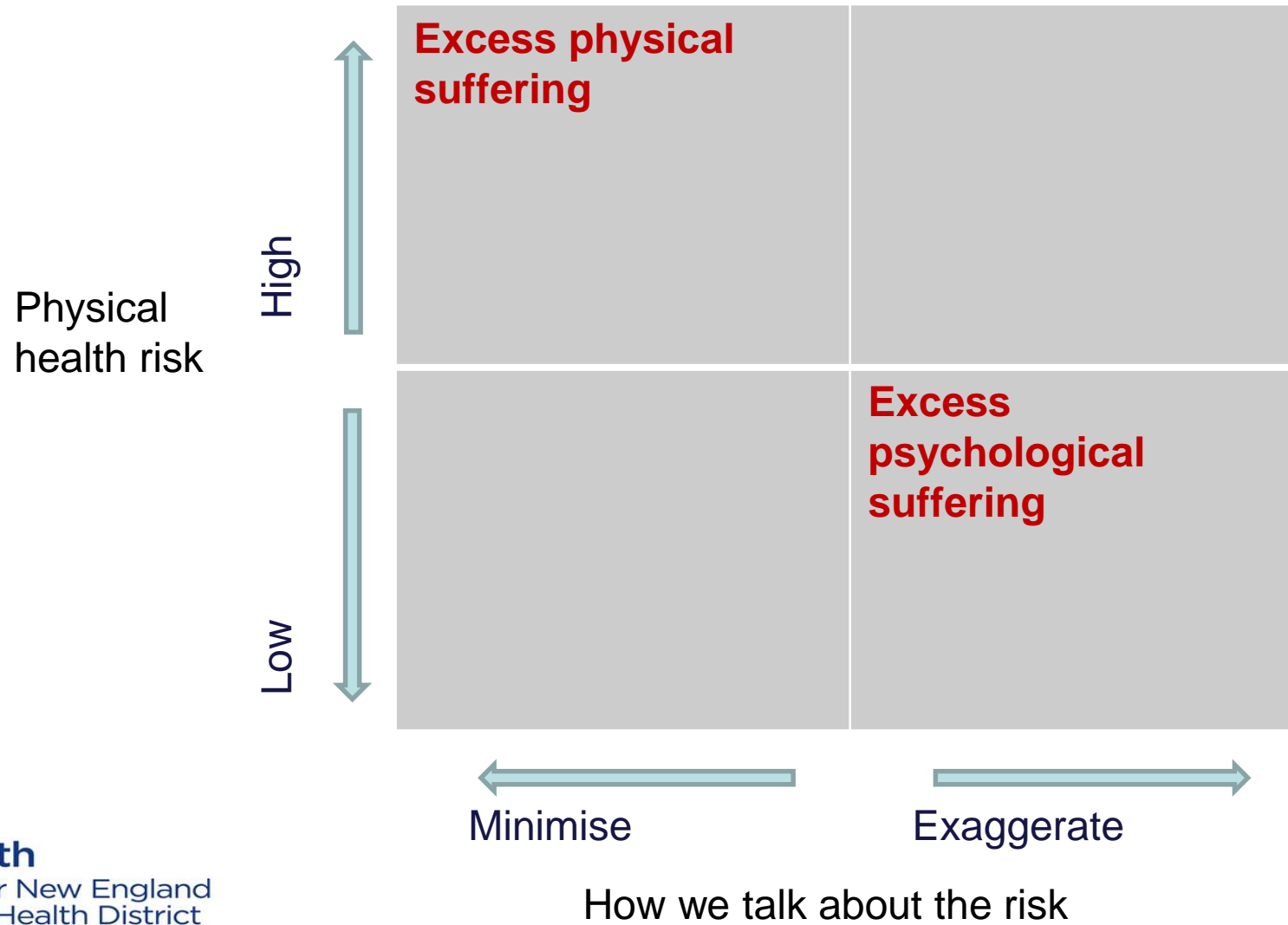
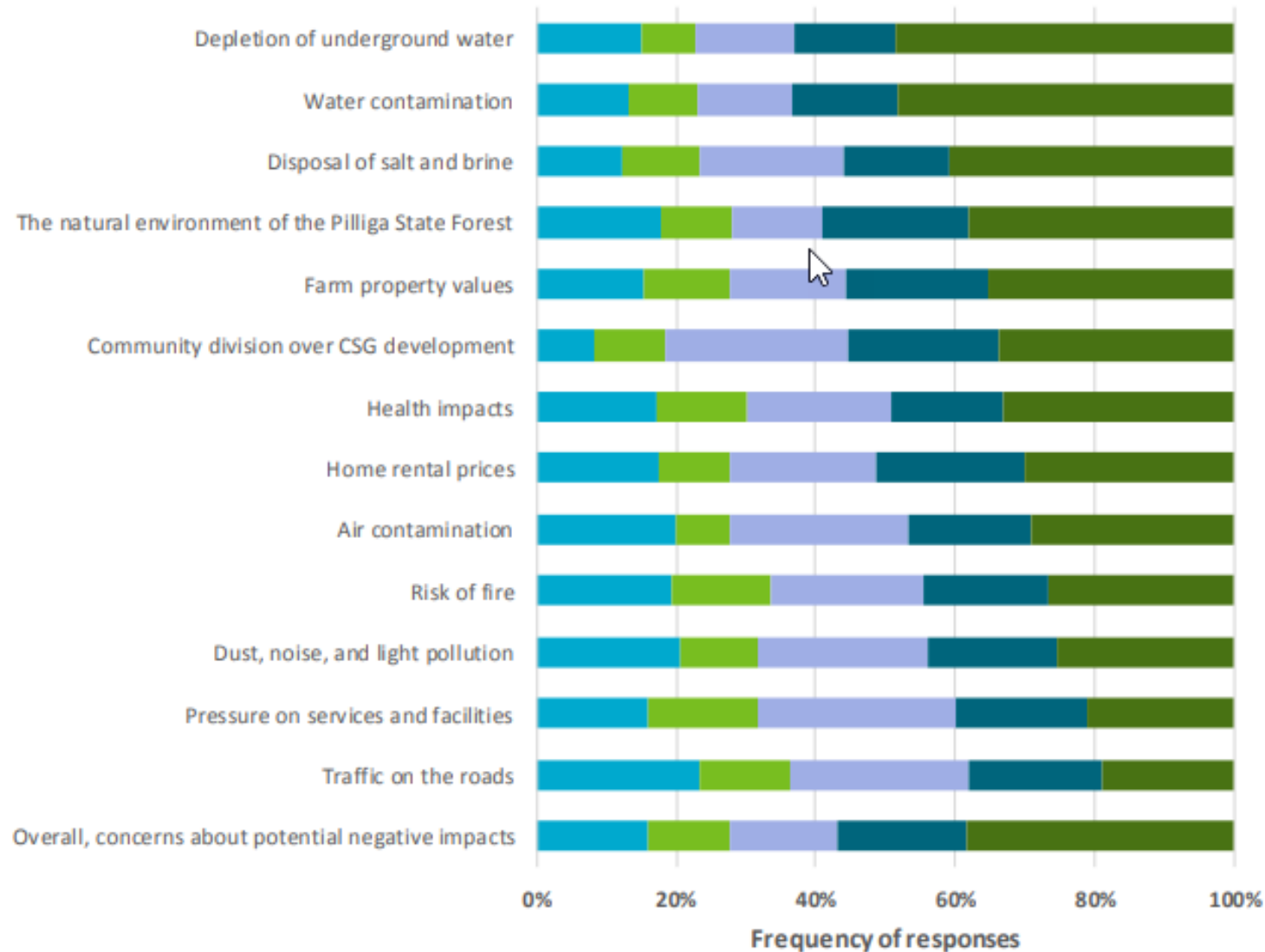


Figure 73 Perceptions of potential impacts: Frequencies of responses



Community wellbeing and local attitudes to coal seam gas development Social Baseline Assessment: Narrabri project - Phase 3 Survey report Andrea Walton and Rod McCrea October 2017



Independent Review of Coal Seam Gas Activities in NSW
Managing environmental and human health risks from
CSG activities

September 2014

3.2.2 Health studies and assessments

A number of approaches can be considered to try to determine potential health impacts that may arise from CSG activities. These include undertaking epidemiological studies and performing an environmental health risk assessment. There are uncertainties inherent in both methodologies and neither is able to provide a definitive risk level for an adverse health outcome for an individual in an at-risk population, such as people with particular sensitivities to chemicals.

Epidemiological studies

Epidemiological studies involve looking at patterns of disease in defined populations. Study designs that may be utilised to examine potential adverse health effects from environmental pollutants (Vaneckova & Bambrick, 2014) include:

- spatial study – which examine the regional distributions of disease
- case-control study – where groups are compared retrospectively with one group demonstrating an outcome of interest and a matched control
- cohort study – where subjects or a subset from the population are followed over time with repeated monitoring; can be prospective or retrospective
- time-series study – where observations, such as GP/ hospital records, over a specified time period is obtained and analysed
- cross-sectional studies – provide information on disease frequency at a given time.

Causation and correlation in an epidemiological study can be difficult to show. This is due to many factors including: obtaining an accurate assessment of exposure by individuals or the community; small population sizes exposed; varied and mild health effects; chronic low exposures in sensitive individuals; lifestyle; socioeconomic status; and alternative potential exposure sources such as combustion heating and power generators. Failure of a study to control for these factors adequately means that its ability to attribute a particular symptom to a specific chemical or industrial activity is limited.

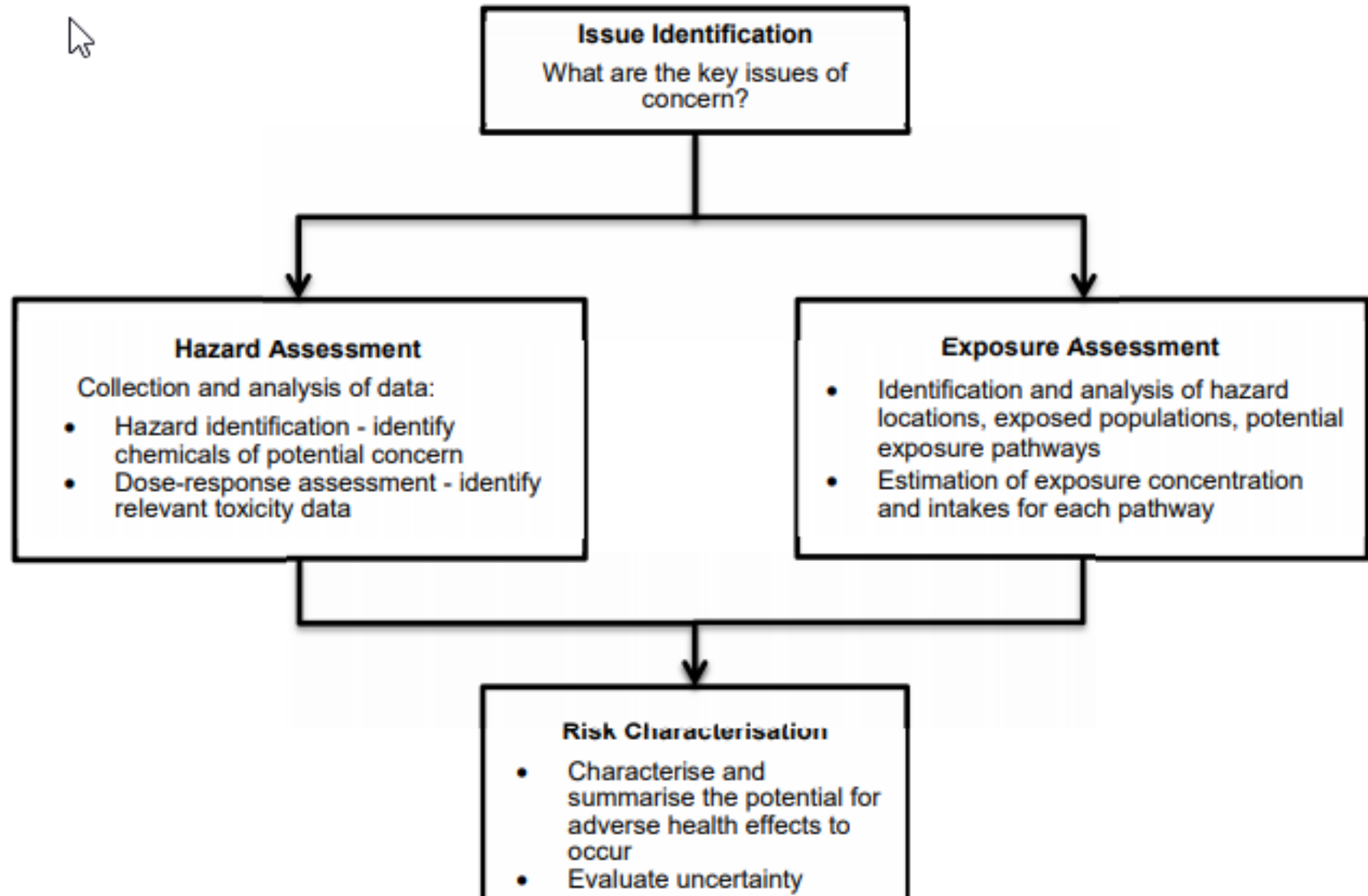


The small scale and short history of CSG production in NSW; the small size of the potentially exposed population; and the difficulty of measuring individual or community level data on exposure to CSG related hazardous materials means that such epidemiological studies are not likely to be useful at this time (Chant, 2014).

Environmental Health Risk Assessment

Environmental health risk assessment (EHRA) is another and likely better approach to determining health risk. It aims to determine the risk to human health from a potential environmental impact, if relevant chemicals, their toxicity, concentrations and exposure pathways are known. If used early in the project approvals stage, an EHRA can provide a valuable tool in assessing potential risks, if any, to human health from CSG activities. This can provide an opportunity for third parties to review the assessment, and for regulators to request amendments to projects deemed high risk before approval is granted. An EHRA can be undertaken at any subsequent stage, with its results being incorporated into management plans and Trigger Action Response Plans

A nationally agreed framework, *Environmental Health Risk Assessment Guidelines for assessing Human Health Risks from Environmental Hazards* outlines the steps involved in undertaking such an assessment (enHealth, 2012) (see Figure 6). An EHRA can range in complexity from a simple screening study to a lengthy and complex analysis.



Is there actual exposure and enough to have an effect?

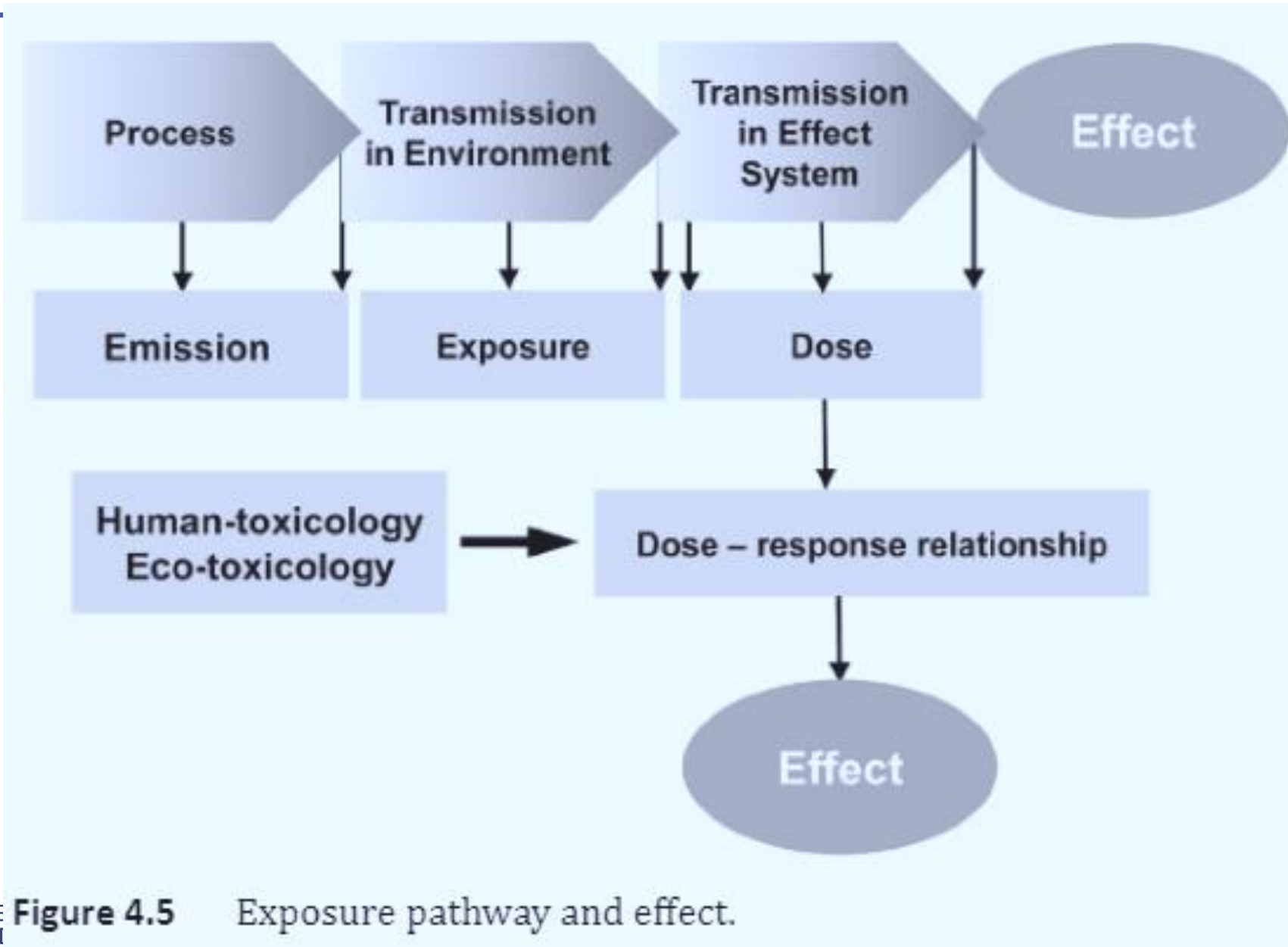
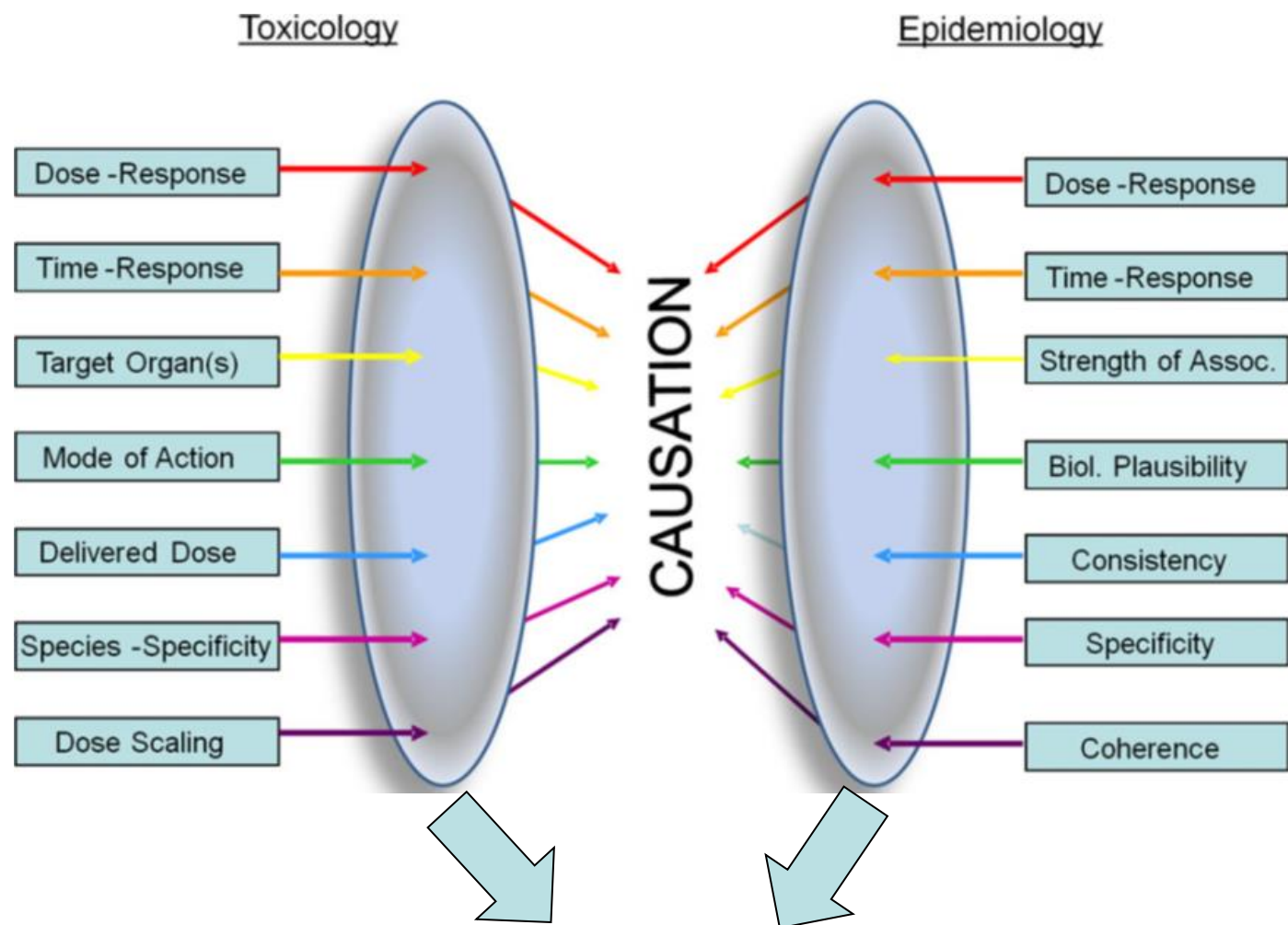


Figure 4.5 Exposure pathway and effect.

A “Health Study” is more than epidemiology



Protective Dome of Air Monitoring



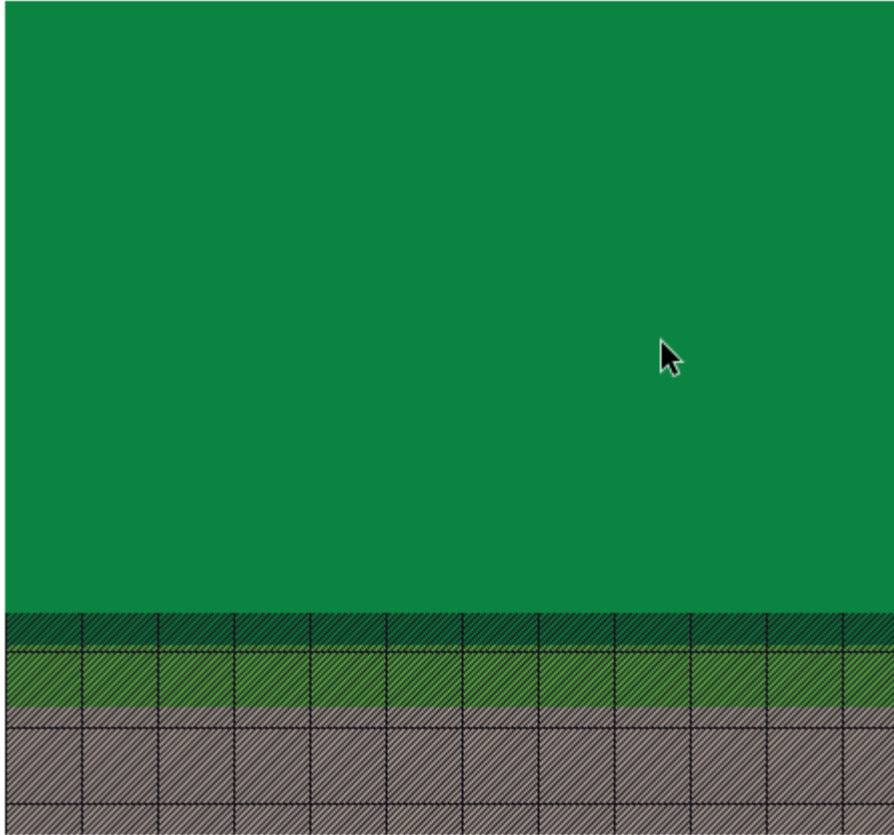


EIS Review – Main Focus

Air

- Nitrous oxides from gas combustion
- PM2.5/diesel from trucks, generators, gas burning
- PM10, also from combustion + construction traffic
- Ozone

Water & Noise



Appendix L

Air quality impact assessment



Table 1: Standards for Pollutants

Column 1 Item	Column 2 Pollutant	Column 3 Averaging period	Column 4 Maximum concentration standard	Column 5 Maximum allowable exceedances
1	Carbon monoxide	8 hours	9.0 ppm	1 day a year
2	Nitrogen dioxide	1 hour	0.12 ppm	1 day a year
		1 year	0.03 ppm	None
6	Particles as PM ₁₀	1 day	50 µg/m ³	None
		1 year	25 µg/m ³	None
7	Particles as PM _{2.5}	1 day	25 µg/m ³	None
		1 year	8 µg/m ³	None

What generates the most PM10 at an open cut coal mine?





Quiz – which of these activities produce the most PM10 or PM2.5 at open cut coal mines?

- Blasting
- Wind erosion of overburden (piles of dirt around mine)
- Wheel generated particulates on unpaved roads
- Wind erosion of coal stockpiles



7.3.3 Ranking of coal mining activities

Table 31 ranks each activity in order of its relative potential to produce emissions of particulate matter. Activities in Table 31 have been ordered based on the ranking determined for PM₁₀ emissions.

Table 31 Ranking of coal mining activities based on total emissions of TSP, PM₁₀ and PM_{2.5}

Activity	Rank of particle emissions		
	TSP	PM ₁₀	PM _{2.5}
Wheel generated particulates on unpaved roads	1	1	2
Wind erosion of overburden	2	2	1
Blasting	6	3	3
Bulldozing coal	4	4	5
Trucks unloading overburden	5	5	7
Bulldozing overburden	3	6	4
Front-end loaders on coal	8	7	9
Wind erosion of exposed areas	7	8	6
Wind erosion of coal stockpiles	11	9	8
Unloading from coal stockpiles	10	10	11
Dragline	9	11	10
Front-end loaders on overburden	12	12	12
Trucks unloading coal	13	13	13
Loading coal stockpiles	15	14	16



- haul roads accounted for almost 40% of PM_{10} emissions from mines; the greatest reduction would be achieved by applying suppressants to haul roads, which could reduce emissions by 21%

Thank you and Acknowledgements



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