Submission to the Independent Pricing & Regulatory Tribunal Review of the Interface between the Land Transport Industries and the Stevedores at Port Botany.

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9/23 Anniversary Sreet
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The current role of the Sydney Ports Corporation and on the role it might take in improving the efficiency of the supply chain.

The Sydney Ports Corporation's responsibility for transporting containers ends at the Port gate. Outside the Port, other entities, such as the Roads and Traffic Authority and RailCorp must shoulder the burden of moving containers to intermodal terminals and warehouses. This landside aspect of freight handling would be the most expensive component of the whole supply chain. It would also be the most difficult to manage efficiently.

If the current increase in annual container numbers is maintained, the Port will reach full capacity in either two, five or ten years, depending on which forecast proves to be accurate. The SPC is embarking on a major expansion which will accomodate an annual increase in container numbers for the next eighteen, twenty, thirty or forty years, again depending on which forecast proves to be accurate.

Part of SPC's role in this expansion will be in its ability to provide enough vehicle booking timeslots (VBS) to cope with the increase in container numbers. The other part of SPC's role will be providing enough rail sidings to cope with the huge increase in rail traffic which would be generated by carriage of 40% of all containers arriving at the port from both sea and landside. The forecast in excess of three million containers annually would require more sidings than at present, perhaps twice the number. Even then, with over a hundred container trains per day, turnaround times would need to be completed in well under an hour, and that is assuming a 24 hour seven day operation.

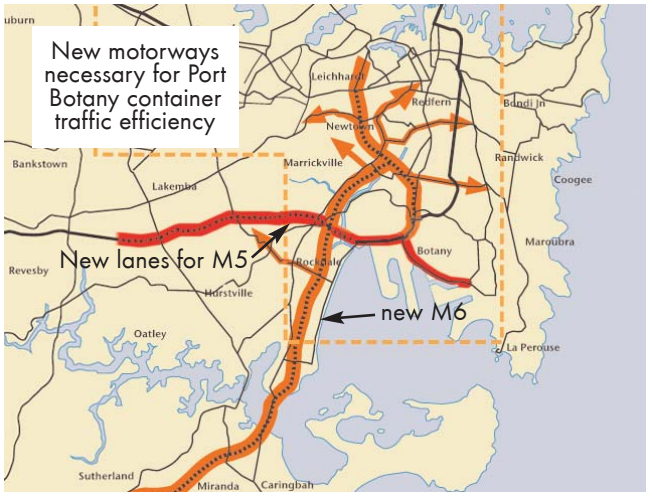
A number of experts have suggested this concentration of rail freight at the Port to be impossible to achieve. SPC needs to provide convincing proof that it will be able to successfully manage this volume of rail freight at the Port.

But the problem worsens beyond the Port confines. There is only a single dedicated freight line as far as Sefton; to be duplicated sometime in the future and another in construction from Sefton to Macarthur. On all other lines freight must share with passenger traffic, which has priority. There are some community groups whose members believe the East Hills line could be used as a freight line. It would seem that bridges along the line have been lifted, presumably to accomodate double stacked containers. The intermodal terminals mooted for South-West Sydney would need a line which doesn't have to go through Enfield but the current embargo on rail freight at commuter peak times (6am-9am and 3pm-6pm) weekdays would limit its use.

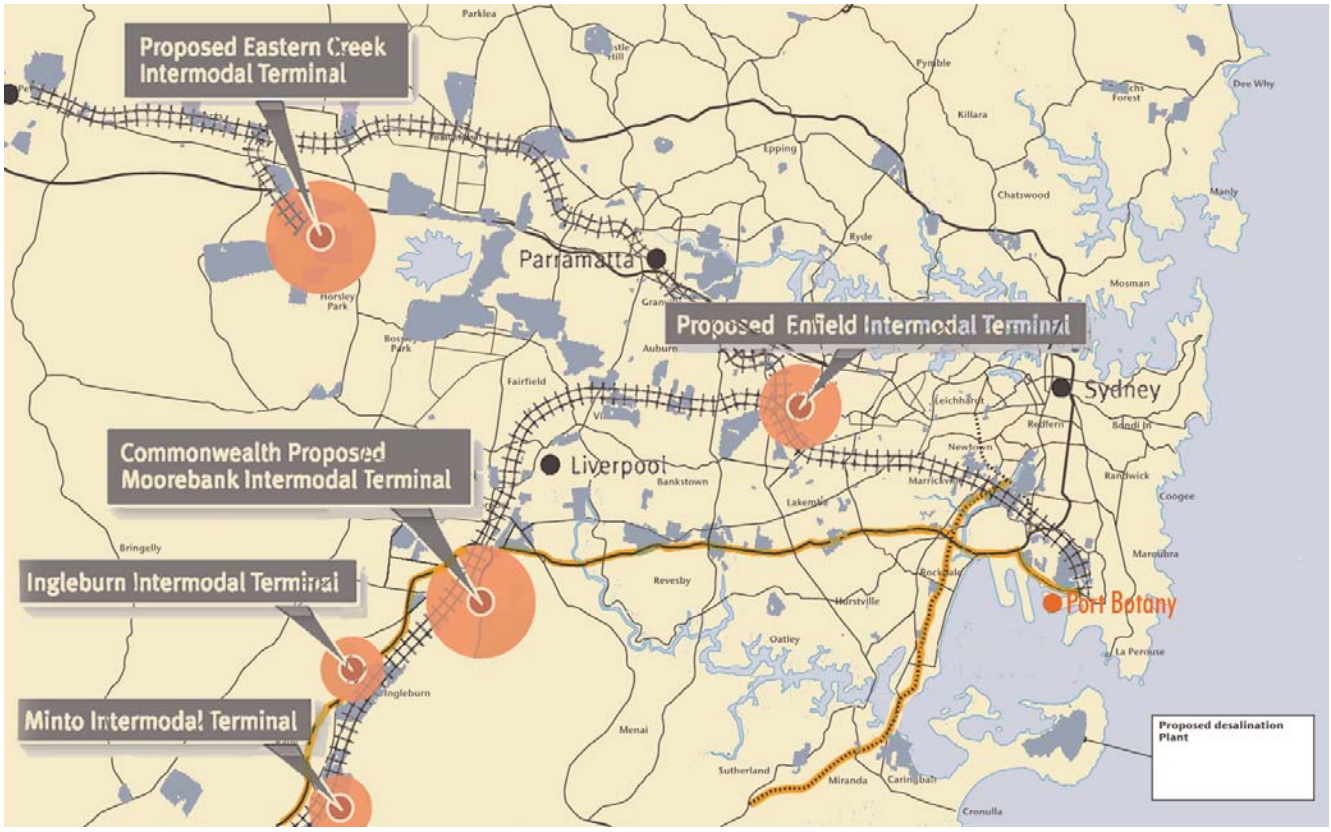
To return to the proportion of containers carried by road, the current vehicle booking system will need to be improved if twice as many containers are to be shifted from the Port in the next eighteen, twenty, thirty or forty years. Even if shifting 40% of the containers by rail can be achieved, 60% of over three million containers will still have to be carried by road transport. That is almost twice the present number. Even today, trucks queue along Botany Road and dozens of trailers are parked along Foreshore Drive. Truck operaters tell us the VBS system is not working in a satisfactory manner. What could truck congestion look like in the next eighteen, twenty, thirty or forty years if there is no improvement?

Access to the port terminals during peak periods and efficiency along the supply chain.

As we noted, the SPC's transport responsibility ends at the port gate. But landside transport of the containers presents an even bigger problem, and must be considered alongside what happens at the Port. If the need in the future to move twice as many containers by road is not adequately planned for, portside efficiency will count for nothing.



At present, peak hour road traffic can cause gridlock, especially on a motorway like the M5, which carries a large proportion of the Port's road freight. The provision of at least another two lanes on this motorway would appear necessary, particularly when the forecast increase in private and small commercial traffic is taken into account. But this isn't the only expansion of Sydney's road network which would be necessary. The M6, a new motorway from Newtown to Sutherland, is one of the many schemes mooted to cope with the extra traffic. One of the more flamboyant suggestions is to build an underground (freight only) railway from the Port to join up with the main freight line at Enfield. All these schemes come with a hefty price ticket. They could end up costing many times more than the cost of the Port expansion.



Development and expansion of the various intermodal terminals to the South and West of Sydney.

Apart from the six existing intermodal terminals, four large new terminals are either in the planning stage or already approved. These will be necessary to supply the expansion of warehousing and manufacturing especially in the West and South Western outskirts of Sydney. While these will add to the efficiency of the supply chain, the concentration of containers at Port Botany requires all cargo to be funnelled along one or two roads and one railway track. Proposals to add container wharves at Port Kembla and Newcastle have been considered: Newcastle is mooted to become a container port after Port Botany is at full capacity. Port Kembla is actually better placed to service the Southern Terminals like Minto.
A partially completed rail freight line from Unanderra to Maldon could avoid residential areas. Newcastle has the capacity to handle a large number of containers: the largest single export item shipped from Port Botany, aluminium ingots, comes from Newcastle. Much of the produce of the Hunter must be freighted to Port Botany for export. Rural terminals at Blayney, Forbes, Parkes, Cootamundra, Narrabri, Wee Waa and Moree could be better served by the proposed Western rail link between Brisbane and Melbourne which passes through or near to all of these centres.
The environmental cost of heavy freight transport, both road and rail, is a matter for serious consideration. It is desirable to keep trucks and trains as far away from residential areas as possible as they produce emissions potentially dangerous to health. The likelihood of stevedores moving to 24 hour seven day week operation is viewed with alarm by residents near the Port and its transport corridors.

Many of Sydney's inhabitants are stakeholders too!

The people who will bear the brunt of this Port expansion live along the railway lines and major roads used by Port traffic. Their health will be affected, their homes will lose value, their whole way of life will suffer as a consequence.

☛ Motorways and freight rail lines costing tax-payers billions of dollars, will be required to shuttle containers between the port and the industrial zones in Western Sydney.

☛ The expansion will add approximately 1,900 more trucks per day to Sydney's roads.

☛ Noise & air pollution will increase. Suburbs all over South and West Sydney will be affected,

☛ Even with 400% more freight trains, rail will still be unable to cope and most of the containers will have to be moved by road.

☛ The marine environment of Botany Bay will be permanently damaged by the massive 60 hectare reclamation necessary.

☛ Sydney Airport is projecting its passenger movements will triple over the next two decades. The combined impact of the port and airport expansion on nearby residents will be huge.

As I am not medically qualified to comment on particulate pollution, I'll leave that to the experts. I am including for your information, a transcript of ABC's Catalyst program 'Dirty little secrets' which has relevance to my submission.

4th May 2006

Narration: We thought we knew how harmful air pollution is - but we were wrong. An invisible plague of fine particles is surrounding us - invading our bodies as we suck it into our lungs.

Dr Brendan Halliburton, CSIRO: We're exposed to fine particles in large quantities all the time, they're always around us.

Dr Mike Kleinman:We've actually shown increased inflammation in the brain.

Narration: This is new science with a dire warning for public health. More people are dying from traffic exhaust than we ever realised.

Dr. Gong: Even if you're completely healthy, well in certain circumstances you may be susceptible.

Ass. Prof. John Gullotta: I'm actually seeing it in my own practice, younger and younger children coming in at an earlier age, suffering from these diseases.

Dr Mike Jerrett: Being in areas of high traffic density is not good. Being very close to major roadways is very bad.

We hope that our message is getting through that pollution is hurting and killing people.

Narration: Most of us spend all our lives breathing these mysterious fine particles. It's time to expose their dirty little secrets.

Living in the Big Smoke means that fine particles are part of everyday life – whether at home or at work, in hospitals or childcare centres, at the shops or in the cafe.

An inner-city school has agreed to help Catalyst measure how much is actually swirling around us.

Mark Horstman, Reporter: We're setting up an experiment, here in a school playground, right next to a busy road.

The grade sixers here are going to use the information coming out of these machines to find out what's in the air they breathe.

It's going to run for a few weeks, and we don't know what we're going to find out – so let's get started.

Abbey Proud, Teacher: Did anyone happen to notice what those brown boxes were? Cale?

Cale, Student: I think they measure, like um, the air particles and the pollution in the air.

Abbey Proud, Teacher: They are air monitoring machines. What sorts of things do you think an air monitoring machine might do?

Seonie, Student: To see what we suck up every day.

Narration: This school could be any city school. What they breathe here is what millions of us breathe everyday.

Mark Horstman, Reporter: How ya goin?

Kids: Good.

Mark Horstman, Reporter: This is one of the machines. Ever seen one of these before?

Kids: No

Mark Horstman, Reporter: Come in a bit closer and see what's in here. So this is where the air goes in through the top. And it gets sucked down into the box here where it's weighed.

Narration: Involving school children in our experiment is something of a first in Australia.

Abbey Proud, Teacher: I certainly haven't heard of it being done before. I think it's a unique opportunity - and we want to find out if there's enough particles here to be poisonous.

Steve, Parent: We are living in the city, so we do have an expectation of a high pollution reading we're hopeful that it isn't - you know, damaging.

Narration: With no way of knowing whether the pollution readings will be high or low, the school made a courageous decision to give Catalyst the green light. This is what we're looking for -
Magnified more than 100,000 times, ultra-fine particles look like this. Tiny specks of sooty carbon coated with the chemical cocktails from burnt fuel, toxins like chromium, peroxides, and cancer-causing hydrocarbons. To measure them, think microns. There are one thousand microns in just one millimetre. Fine particles less than 2.5 microns, classed as PM2.5, are smaller than a red blood cell. And much smaller still, less than one-tenth of one micron, are the ultrafine particles, the size of a virus.

Busy roads spew out more fine particle pollution than anywhere else - exactly where millions of urban Australians live, work and play.

Mark Horstman, Reporter: Right here in eight lanes of traffic, I'm probably inhaling around ten million of these particles with every breath. And that's not surprising because trillions of them come spewing out of the average car.

Narration: Many more come from diesel engines and trucks. The fear is, the smaller the particle, the bigger the health risk, because tiny particles reach parts of the body that larger particles can't. To find out what the latest research can tell us, I need to visit a mega-city choking in traffic - Los Angeles.

Narration: Los Angeles is a magnet, not only for wannabe film stars but for scientists investigating particle pollution. And it's easy to see why - this has got to be the world's biggest natural laboratories. And even up here, high in the Hollywood hills, late in the afternoon, you can see this rising tide of particle haze creeping up the range. But it's down here in the city, where people breathe some of the most polluted air in the world. Because there's 17 million people driving 10 million vehicles every day.
And what makes matters worse is LA's geography.

Dr Mike Jerrett, Medical Geographer: We have the Los Angeles basin surrounded by the San Gabriel, the San Bernadino and Santa Ana Mountains and we get a cool ocean breeze and warm air coming off the mountains and that creates what's called a temperature inversion. So it compresses the pollution close to ground level and really allows it to cook.

Narration: Like a big bowl with a lid on it?

Dr Mike Jerrett, Medical Geographer: It is, and it keeps the population and the pollution too close together... and there's nowhere for it to go except into people's lungs.

Narration: On a clear morning, you can see the mountains behind downtown LA. But by midday, the particle haze is so thick it makes the entire mountain range completely disappear. The problem is so severe that your car's exhaust is required by law to meet pollution standards. Unlike Australia, in California you can't sell a car without an emissions check.

Jim, Jim's Smog Centre: There's five different types of gases that come out. Hydrocarbons, carbon monoxide, oxides of hydrogen, oxygen and carbon dioxide.

Narration: But just keeping an eye on the exhaust pipe won't tell us everything we need to know.

Mark Horstman, Reporter: For 60 bucks, Jim will tell me what gases come out of my exhaust pipe, and I can get the car registered. But that doesn't give me the whole story about what kind of particles, and how much are coming out, plus what happens to them once they escape into the big wide world.

Narration: There's a chemical soup out there, making brand new particles from hundreds of ingredients. And atmospheric chemist Paul Ziemann collects the recipes.

Dr Paul Ziemann, UC: The real atmosphere is very complex, so one needs to do more controlled studies in a laboratory setting.

Narration: So he creates an artificial world - an experimental chamber lit by fluoro tubes, like a freeway in the sun.

Dr Paul Ziemann, UC: What we have here is some hydrocarbons that are similar to what one might see by a freeway, and we create some reactions that lead to particle formation, and then those molecules are analysed in this spectrometer.

Narration: It only takes two of these chemicals to brew smog in a bottle.

Dr Paul Ziemann, UC: So what I have are two glass bulbs here. The larger bulb contains cyclohexene which is a component of car exhaust, and the second is ozone which is an oxidant formed in the atmosphere from sunlight - but if I mix the two together by opening this valve - you'll notice a cloud that appears and - this is the same sort of haze that's formed in the atmosphere.

Narration: With these new particles made by chemical reactions in the air, as well as the particles made by the engine, you've got double the trouble. Back in the school yard, the particle monitor has been whirring away for two days, sampling the air. The machine we're using is called a TEOM. It's the same type used by state governments to measure air quality.

Brendan Halliburton, CSIRO: It's commonly used by monitoring sites, the EPAs, CSIRO has used these, it's a very standard piece of equipment.

Narration: When the authorities weigh and report levels of particle matter, it's for 10 microns across and less. But is this level adequate to protect public health? After all, larger coarse particles make up most of the weight. We're using the TEOM to weigh only fine and ultra fine particles - smaller than 2.5 microns. We've set it up 20 metres from an arterial road with around 80,000 vehicles passing each day.

Brendan Halliburton, CSIRO: Being close to a roadway, certainly during the peak times, it would be expected that most of your fine particles, less than 2.5, would be coming from the roadway.

Abbey Proud, Teacher: I suppose the immediate assumption would be that there will be large volumes of particle pollution, being next to a main road.

Narration: And that's what we're finding. The experiment's just begun, but one morning before school starts, the TEOM records a very high level of PM2.5.

Brendan Halliburton, CSIRO: How do those levels strike you? You have a couple of reasonably high days.

Narration: And this will be a worry for everyone in the area if it keeps happening. We won't know if these high readings are the norm until our experiment has finished. Across the Pacific, research has gone further than just measuring the particles in the air. Toxicologists like Mike Kleinman study what the fine particles can actually do once they get inside your body.

Dr Michael Kleinman, Toxicologist, UC Irvine: This is a lung, a dried lung from a person about sixty years old who lived in Los Angeles most of their lives and what you can see here is all these black particles that were originally taken in and were removed by the immune system and placed out there in lymph nodes. What's significant is that when these particles are out there if they contain toxic materials, heavy metals, carcinogens, they can have life long effects.

Narration: Scary stuff - and if particles get beyond the lungs, what happens next?

Dr Michael Kleinman, Toxicologist, UC Irvine: The animal is being induced.

Narration: To find out, Mike uses rats as stand-ins for people. From this rat we will get heart rate, their arrhythmias. We'll actually get all the same information that we get from human ECGs. The operation today is to implant this transmitter in the abdomen of the animal and to connect the leads to the chest across the heart under the skin. The rats breathe only purified air in the lab, until their big day comes. Then they're off to stay next to the freeway in specially cooled gas chambers.

Dr Michael Kleinman, Toxicologist, UC Irvine: These particular animals are going to be exposed in an area of Los Angeles that has very high particle pollution. We place the animals at the edge of the van, and connect them to an air pollution device that concentrates the particles out of the air by about twenty to thirty times.

Narration: Mike's team can select the particular size of ultrafine particles they want to test.

Dr Michael Kleinman, Toxicologist, UC Irvine: Now we have to adjust the flow to 5 litres per minute. On a usual day, the air pollution is coming directly over this site.

Mark Horstman, Reporter: And how thick is the air pollution? How many particles would you get in a cubic centimetre for example?

Dr Michael Kleinman, Toxicologist, UC Irvine: Well we probably are getting about 100,000 particles per cc, which is a fairly high number concentration.

Narration: The bionic rats breathe the particle-laden air and transmit their heartbeats to a nearby computer.

Dr Michael Kleinman, Toxicologist, UC Irvine: And then we have another group that only gets purified air so we can compare the results in these different groups of animals. OK, we're all connected up, we're good to go.

Narration: Amid the shimmering heat of summer concrete, it's time for a breather as the experiment gets under way. This is actually the time when a visit from an ice-cream truck would be very nice. Before ground-breaking experiments like this, we had no idea what fine particles from traffic do to living things. The clues are in these rats. Over two weeks they get a measured dose of particles from the surrounding brew of pollution. And the results are disturbing.

Dr Michael Kleinman, Toxicologist, UC Irvine: Definitely signs that the effects of the pollution affect not only the lungs but they affect the heart, and we've actually shown increased inflammation in the brain of animals that were exposed near the freeway. So other organs are definitely involved.

Narration:The ultrafine particles are so incredibly small they slip right through the lungs and hitch a ride with blood cells. And because they get right inside cells and disable them, they are the most potent part of air pollution, up to 50 times more damaging than bigger particles. Mike finds they cripple vital functions, like the heartbeat.

Dr Michael Kleinman, Toxicologist, UC Irvine: In the rats we are finding changes in arrhythmias, the animals after exposure have many more abnormal heartbeats than before the exposure.

Narration:This could explain why in cities the world over, more elderly people prone to heart attacks and stroke, die on high pollution days.

Mark Horstman, Reporter: Traffic exhaust is full of toxic nasties from burning fuel. And ultrafine particles are a very good way of delivering them. Within hours of arriving in my lungs, these poison-coated particles will be turning up in my heart, my liver - even my brain.

Narration: But it's the heart where the most acute effects are felt. It's routine for cardiologists to ask their heart patients about smoking. But I'm told they don't usually ask about particle pollution.

Dr Henry Gong, Director, Los Alamos Health Centre: It's like smoking, cigarette smoking, you inhale the particles and gases, same thing with particles that primarily come from combustion.

Narration: Lung experts like Henry Gong now regard fine particles as a trigger, and perhaps a cause, of heart attacks.

Dr Henry Gong, Director, Los Alamos Health Centre: It's gone beyond the lung specialist area to the heart specialist.

Narration: This unlikely looking caravan is at the vanguard of fine particle research. Inside is a cramped laboratory where patient volunteers inhale pollution in the name of science.

Dr Henry Gong, Director, Los Alamos Health Centre: For the ultrafine concentrated exposures, which this is designed for, the subject would wear a mask for the entire two-hour exposure period.

Mark Horstman, Reporter: You're putting people with asthma in here too?

Dr Henry Gong, Director, Los Alamos Health Centre: Yes healthy people without asthma, and also people with documented asthma

Narration: His results reflect the rat experiments - ultrafines are acutely toxic to the heart.

Dr Henry Gong, Director, Los Alamos Health Centre: It doesn't matter if you have lung disease, you still get a systemic effect such as reduced heart rate variability.

Narration: That means your heartbeat is less perky than it should be. And if your heart's already struggling, an overload of particles could be fatal.

Mike Jerret: Heart disease is certainly a big part of the picture but the story goes beyond that.

Narration: Mike Jerrett combines medicine with mapping technology to see links that others haven't seen before.

Mark Horstman, Reporter: Each of those dots is a person?

Mike Jerret: That's right - and these are the location of people in a health study where we have information on their health conditions and we're linking that to pollution information from a series of monitors.

Narration: The health problems mapped by his geographic information system include birth defects, underweight babies, even stunted lungs up to ten percent smaller.

Mike Jerret: Children who grow up in more polluted communities have lower lung function at age 18 that could affect them throughout their whole life.

Narration: And then there's atherosclerosis, a disease we've always assumed comes from lifestyle choices like too much fat and not enough exercise.

Mike Jerret: Atherosclerosis is the thickening of the carotid artery, the main artery coming out of your heart and it underlies about 50 percent of mortality in most western societies.

Narration: Mike's team cross-checked measurements from the carotid arteries of 800 people with the local PM2.5 levels – and found a startling link.

Mike Jerret: It was really shocking - as pollution goes up the arterial walls get thicker and we were really surprised to see this magnitude of effect.

Mark Horstman, Reporter: Why? Haven't you seen this kind of link before?

Mike Jerret: This is the very first study where we've been able to link the underlying medical cause for so much sickness and death in our society to air pollution. Really, these are the smoke stacks of the new millennium - our freeways are the major emission sources.

Narration: The World Health Organisation estimates that globally, fine particles kill 800,000 people every year. But even a staggering death toll like this doesn't necessarily mean there's quick action to prevent it.

Dr Henry Gong, Director, Los Alamos Health Centre: I think it's never fast enough probably, but there's always two sides of the argument. How fast is fast? How clean is clean?

Narration: In North America, 95 million people, that's roughly 1 in 3, live in air that consistently exceeds fine particle standards. It's so bad that the US Government has a death map, which pinpoints your risk of early death from PM2.5 pollution, depending on where you live. Even with more than 2000 deaths a year in Australia, we don't have maps like this, because our governments aren't yet required to measure ultrafine particles. But like the US, look along any freeway or busy road here in Australia, and you find thousands of schools, hospitals, child-care centres and houses. It's home for millions of us.

Assoc. Prof. John Gullotta, Pres. NSW AMA/Local GP: Pollution is becoming a way of life. I don't think it should be happening in Australia.

Narration: Dr John Gullotta is a local GP. Many of his patients come from the suburbs surrounding his clinic, where residential streets have become pollution hotspots.

Assoc. Prof. John Gullotta, Pres. NSW AMA/Local GP: In the port for example near me, I'm actually seeing in my own practice, younger and younger children are coming in, being exposed to these pollutants unwillingly - who knows, in years to come their arteries may be affected and their heart may be affected by it.

Narration: A few blocks away, Veronica's front gate opens onto a street that's become a truck highway.

Veronica, local resident: My family has seven children, we've lived here for about eight years, this is home - and with the trucks coming, we know there's pollution, but what can we do?

Narration: It's a question people all over the world are asking. Do we really know enough about our exposure to these hidden killers? It's back to school for some answers.

Abbey Proud, Teacher: Let's have a look at this data - I've got it here on the overhead and you've also got a sheet on your desk.

Narration: After several weeks of monitoring, the students can plot the daily particle levels at their school.

Abbey Proud, Teacher: Have a look at your graph or the graph on the board - and start to think about some ideas about that data - what is it showing you?

James?

James, student: We found that Wednesdays and Saturdays were the most polluted, because Wednesday is the middle of the week where everyone maybe goes to their work, and on Saturdays they go to the park or their sport.

Abbey Proud, Teacher: What's the highest average?

Student: 9.8

Narration: 9.8 sounds high, but it's well under the health guideline of 25 micrograms of fine and ultra-fine particles in a cubic metre.
It seems like good news for the school.

Abbey Proud, Teacher: We assumed, I think, which is a mistake with science, we assumed that the readings would be a lot worse than they are, so we're pleasantly surprised.

Stephen, Parent: The low results are very pleasing - and I feel that's great news if that's the case - so it increases my interest in it, so a low result makes me want to know why it was a low result.

Narration: One explanation is that mother nature messed with the results.

Dr Brendan Halliburton, CSIRO: Given the weather conditions over the last two weeks. Certainly the rainfall will remove the finer particles, they'll be washed out, and you'll get lower readings.

Narration: But even without the rain, the TEOM weighstation may not be capable of telling the whole story. If the bulk of the particles were in the ultra-fine range they'd be virtually weightless. So Catalyst asked CSIRO to do another roadside experiment.
Meet ELPI. It's a sophisticated device for counting particles and sorting them by weight. This is the only one in Australia used for outdoor research.
Unlike the TEOM a few metres away, the ELPI delivers alarming news with every passing truck.

Mark Horstman, Reporter: What are the readings like here?

Dr Brendan Halliburton, CSIRO: When we had a couple of trucks go past, we had readings of up to 500,000 particles per cubic centimetre.

Mark Horstman, Reporter: Half a million in a cubic cm?

Dr Brendan Halliburton, CSIRO: Half a million in a cubic cm, they're in the ultrafine range - very very fine particles.

Narration: 500,000 is a startling number, especially given the warnings that ultrafines are the most dangerous part of air pollution from traffic. And the ELPI's readout shows that even when ultrafine numbers are high, their mass is practically zero. They would have gone undetected by the weighing machines used by our governments. In the US, high ultra-fine particle counts have led to new laws.

Mike Jerrett: Some of the research that's been done in California has now resulted in a law where it's illegal to put a school or a day care centre within 500 feet of a freeway.

Narration: In Australia we have no such law, even though ultra-fine levels may be high.

Dr Brendan Halliburton, CSIRO: That's where the science comes into play -without good science you don't get good regulations.

Narration: Scientists still want to pin down whether it's size or chemistry that makes particles dangerous. But in the meantime, our regulations for ultra-fines lag behind the US.

Dr Brendan Halliburton, CSIRO: Currently in Australia we have a PM ten standard but we don't have a PM two-point-five standard, it's a guideline.

Narration: And with no legal standard to keep fine and ultrafine particle levels low, the dose we're actually getting remains a mystery.

Mark Horstman, Reporter: But what I can tell you is that particles have a dirty little secret - there's no level that's completely safe.

Dr Henry Gong, Director, Los Alamos Health Centre: You ask the question who should be concerned? I think we all should be concerned.

Dr John Gullotta: One could really say that exposing children to pollutants could be a form of child abuse. I think governments have to look beyond the dollar.

Dr Michael Kleinman, Toxicologist, UC Irvine: It's much more cost-effective to eliminate pollution than to pay for the doctor bills later.