



The air we breathe : Rich Fuller of Pure Earth

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Host: Clara Young

Speaker: Rich Fuller

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The air we breathe: Rich Fuller of Pure Earth

Intro [00:00:05] Welcome to OECD Podcasts, where policy meets people.

Clara Young [00:00:08] Air pollution is the silent killer. According to the World Health Organisation, about 7 million people in the world die prematurely from air pollution every year. That's a mortality rate that's higher than death from road traffic accidents, war and tobacco related diseases. Nine out of 10 of us breathe air that's too polluted by World Health Organisation standards. I'm Clara Young and I'm here with Rich Fuller, who's a pollution expert and founder of Pure Earth. He's also the co-chair of the Lancet Commission on Pollution and Health.

[00:00:45] Thanks for coming into the studio, Rich.

Rich Fuller [00:00:47] Oh, it's my pleasure.

Clara Young [00:00:49] We're in Paris and I checked the pollution index before I came in today, and it's low. But is there a standard way of measuring outdoor air pollution all around the world? Because sometimes one reading in the same city will say pollution levels are OK and then another one in the same city will say is not so good. I think there is a bit of confusion about how we measure air pollution and by what standard.

Rich Fuller [00:01:15] I think you're right, there's a series of different indexes that people have not yet managed to get a commonality to. Different indexes are used in different places. The basic metric, though, is the amount of particulates that are in the air and you worry about the size of these little particles. It's PM2.5. That means 2.5 microns in size. This is the one we worry about most. It's about a third the size of a human hair. And these small ones are of concern because they're not caught in the little hairs that line the lungs and the throat so you don't catch them and cough them up. Instead, they go all the way through and into blood. And when they're in the blood, they then will attach to the arteries and cause arterial hardening and thickening and then sometimes sluff off and stop in the brain and cause a stroke. You end up with heart attack and stroke from these small PM2.5. That is the main metric, what is the concentration of PM2.5 in the air and where does that come from.

Clara Young [00:02:25] What is PM2.5? What are the main causes?

Rich Fuller [00:02:29] It's from fossil fuel combustion. It's from exhaust, from cars and trucks. It's the light grey colour that you see. The very thick black stuff are bigger particles, which will often settle more quickly. They'll certainly cause a cough and asthma and can cause some cancers. But the ones that cause the largest disease burden are the smaller ones. It comes from burning of crop residues from power plants, basically from fossil fuel combustion.

Clara Young [00:03:01] Now, just keeping on these small particulate matter, the thing about air pollution, as you pointed out, is that you can't see it. It's so small, except, you know, when we have smog. And it's hard to know, for example, on pollution days, if you're getting headaches or you're feeling extra tired, what is the cause of that? What are the usual first effects of air pollution? And then the second effects? I mean, you began to talk about it as well with the cardiovascular and strokes, but what do we feel first?

Rich Fuller [00:03:35] Well, you know, breathing in contaminated air will cause lethargy and give you a cough and can increase infectious disease. All of those things are there and apparent. I mean, every time you step out into an airpocalypse, they're calling it, you know, it's dramatic and awful. You can't exercise all of the different systems of the body are affected by it. So, I mean, we just live in air with 70% water, but we are all air everywhere. We can't live without it. So, it's got to be clean.

Clara Young [00:04:11] Some cities are trying to fight pollution by, for example, bringing down the speed limit in cars. Is this effective? Is it the most effective way of dealing with it?

Rich Fuller [00:04:21] The most effective intervention varies very much from place to place. And it may be that if you've done all of the bigger interventions that that particular one you mentioned might be the next best one. But first, you really want to make sure you're getting rid of the large stationary sources of particulates, which might be power plants or big industry or something like that. And then you look at small stationary, which might be incinerators or people burning dirty oil for home heating or perhaps charcoal heating, that sort of thing. And then you look at transportation. So, transportation can be broken down into trucks, public transport cars and automobiles, and each of them has different kinds of interventions, depending on what goes on there, often city based, but they often require federal or national regulation and rules to make them happen.

Clara Young [00:05:21] Now, this is kind of a personal bugaboo of mine, but I notice a lot more people now who sit in their cars, idling their engines. And the reason why they're doing that is because they're charging their cell phones. Now, apparently, idling is even more polluting than driving, isn't it?

Rich Fuller [00:05:39] Oh, it'll depend on the car, but an old car, I think, is more polluting than a new car. And you need your car to be on to charge, but you don't need it to be running because you're just pulling juice from that large 12-volt lead acid battery. Your phone only takes a tiny amount of that. As long as the car is on, it should be charging. So, idling, you can see it in colder climates when people are running heaters. What I like about modern cars is that they will switch off even when they're at a stoplight. This is great because you're right, big puff of toxins often come about from that first piece of acceleration when you take off. That's often one of the biggest pieces of the PM2.5 load.

Clara Young [00:06:24] Right. OK, now the number of deaths from outdoor air pollution, I make that distinction because, of course, there's indoor air pollution as well from people who use coal.

Rich Fuller [00:06:31] And cook stoves, mostly.

Clara Young [00:06:33] But just talking about outdoor air pollution right now, the number of deaths has gone up since 2000 in the world. Now, why is that?

Rich Fuller [00:06:52] You know, it doesn't really make a lot of sense to make this distinction between indoor air pollution, which is mostly from burning wood or dung in the poorer households of the world, and

outdoor air pollution, which is coming from these other things we talked about. But because, you know, air moves through doors and windows and dirty air outside will come inside and vice versa. We're starting to move away from that distinction and look at them as homogeneous and look at the strategies to be able to reduce emissions, you know, specific to a particular place. You made a point about deaths increasing and this is true globally. In fact, when we look at what we call modern pollution, which is all of those aspects of pollution that have come about from industrialisation and urbanisation, this enormous and successful growth that's going on in the world over the past 100 years, those deaths are steadily on the rise. And so, it's not just air pollution, it's also chemicals and soil pollution and pollution and the workplace, occupational pollution.

Clara Young [00:08:08] So, agriculture, chemicals, pesticides that we use in agriculture that goes into the waste water. What else more specifically?

Rich Fuller [00:08:17] Yes, that's a part of it. Although that part is not measured right now in the data. The big piece of it is lead poisoning. And that's responsible for a million deaths a year at the moment and probably more.

Clara Young [00:08:29] And that's in for example, it's used in cooking utensils or in paint. Anything else that we should be on the lookout for.

Rich Fuller [00:08:37] Main exposure to lead is in soil, and it's usually a deposit from a battery recycling smelter nearby. Badly run not, you know, not up to OECD standard battery recycling smelter will release a lot of lead and a deposit in the soil and it pollutes and damages children for decades to come. Probably the largest single source. The next larger ones are related to lead being used in cookware, especially in ceramic pots that are kiln fired in wood burning kilns. And it's the glaze inside that shiny glaze that you see in the cheapest pottery that often is made, mostly with lead. That's a big exposure. There's some in paint, but paint is mostly a problem on the east coast of the United States. It's not so much in the poorer countries.

Clara Young [00:09:30] I see. What are the best tools that you've encountered now? Let's talk domestically to combat these pollution issues. That you have found. The EU recently passed the clean air package. What do you find is the thing that works the best?

Rich Fuller [00:09:50] It really does vary according to what the sources and what you need to do. And it's done very well. And throughout the EU is do source apportionment analysis for a particular issue. For example, here in Paris, the mayor has put in a great deal of work in reducing transport and managing trucks and trucks transportation. The same in London, too, and that's bearing fruit. It's doing some, I think, significant reductions in air quality improvements. If we look, though, at where PM is now coming from.. Most of it's coming from out of the country and blowing in from other places. And so, for example, in Eastern Europe, a lot of the heating is done using coal without any controls, its home heating and also the crop residues are burned in the Ukraine when the wheat comes in and after the thaw in February, March, and all of that particulate matter will blow back into Western Europe when the winds are just so. And I think that now is becoming more of an issue than some of the domestic strategies that have been implicated. And these are becoming the larger loads. For example, a very interesting study that was done in San Francisco found that 29% of PM2.5 particulate matter in San Francisco, it was coming from the coal fields in China.

Clara Young [00:11:24] Yes, I saw that in your presentation. It was very, very striking.

Rich Fuller [00:11:28] Yes. Floating all the way across the Pacific and rightly pointed out by one of your colleagues, it's you know, while a lot of it's hitting San Francisco, a lot more of it's hitting Tokyo and Japan, I think these transboundary issues are becoming now much more important for the wealthier countries than the domestic issues, because we've put a lot of energy and attention and had a lot of success.

Clara Young [00:11:54] But something we discussed before we began this podcast was the Paris climate agreement doesn't cover air pollution. We don't have a multilateral structure to deal with pollution yet. What can we do now?

Rich Fuller [00:12:08] You're right. And I think that's something that, you know, ought to have been in the Paris agreement. And I you know, I've discussed this with Christiana Figueres and she wishes that we had known so much more about air pollution early on when that whole agreement was being negotiated, because it would have made it much stronger and been much better for public health, I think, to have included this aspect. So, you're right. It is it is a problem. And there isn't an international mechanism. There is quite a good mechanism within Europe and its partners to the east that's in play that works reasonably well in providing some support and assistance.

Clara Young [00:12:47] That's the only sort of regional multilateral mechanism that you know of right now.

Rich Fuller [00:12:53] That's the only one that works at a global and a regional level at all at the moment. There is nothing else in air pollution out there.

Clara Young [00:13:03] Let's go to domestic measures back to that question again. But in the global south, what are some things that are working in the countries that have the biggest problems? India, China? Actually, Latvia, I think has a very big problem.

Rich Fuller [00:13:20] Yes, a very enormous problem. There are some really good successes where cities especially and countries have taken very strong initiatives to reduce air pollution. China is the big success story right now. Know Beijing air pollution over the last five years has improved so dramatically and it's due to a whole range of different activities. They've taken the big heavy polluters and moved them out of town and put better pollution control equipment onto them. They've looked at households around and changed their heating over to heat pumps, you know, when you drill a hole in the ground using geothermal. As a local initiative, they've put in much tighter controls on transportation and brought in public transport that's either electric or LPG run. A lot of a lot of planning and investment has gone in to reducing air pollution, especially in Beijing and Shanghai, less so in other cities. And they need now to catch up. You know, the coal belt is still very bad for air pollution, but there's a success story there that as a model to follow. Delhi is beginning the process, but quite a way behind. Some interesting successes that are very obvious, Bangkok has done extremely well over the last 10 years and done a lot to mitigate air pollution issues. Mexico City went through an enormous transition. It was the most polluted city in the world at one point, according to UN environment, and it's now mostly clean. It's up and down overall when you look at death

and mortality. Globally, the numbers are getting worse, but there are pockets of success that are really good to see.

Clara Young [00:15:16] Now, it's also a financial question as well. Are governments putting more money into converting to fuel sources that are cleaner, both for heating as well as for transport and in some places, money into this?

Rich Fuller [00:15:30] Generally, the investment, first of all, the investment in overseas development assistance, the, you know, the bilateral or the multilateral spend that's lacking. There's very little attention to pollution and health in ODA at the moment. Investments in country in their own development agendas varies dramatically from country to country. Many countries have ignored it entirely, especially in sub-Saharan Africa. Other countries have got decent and solid programmes and large investments like China and others are just beginning. So, it's a mix.

Clara Young [00:16:06] Well, thank you for talking to us about this, Rich.

Rich Fuller [00:16:09] Oh, it's great fun. Anytime.

Clara Young [00:16:10] I'm Clara Young, to find out more about this subject, check out pureearth.org and our publication of *OECD Regions and Cities at a Glance 2018*. \

Outro [00:16:24] To listen to other OECD Podcasts, find us on iTunes, Spotify, Google Podcast and soundcloud.com/oecd.