

# LEAD Action NEWS

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The newsletter of The LEAD (Lead Education and Abatement Design) Group Inc.  
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Editor-in-Chief: Elizabeth O'Brien. Graphics and Web Administration: Monika Mangal.

## Celebrating the End of the Leaded Petrol Era!!

We did it! The end was achieved in July 2021 so most of this newsletter is dedicated to it.



Volcano Art Prize 2021 Entry: Artist's Name: Elizabeth O'Brien. Title: Celebration of the end of the 100 year reign of Leaded Petrol globally. Lead-Safety Message: **After 35 Years, Global Leaded Petrol Phaseout which began in Japan in 1986 has finally ended in Algeria in July 2021. Next phaseout required: Leaded Aviation Fuel!** Description of Work: Collage (made in Paint) of progressive highlighter drawing dedicated to Noela Whitton. URL: <https://volcanoartprize.com/portfolio-item/celebration-of-the-end-of-the-100-year-reign-of-leaded-petrol-globally/>

## Enter Volcano Art Prize 2021 by 27<sup>th</sup> September!

To be in the running for this **annual lead-awareness-raising global art/photo/film competition open to all ages**, just go through your smart phone photos/videos and pick a landscape-orientation one, create a short Title and Lead-Safety Message and enter as you many times as you like, at <https://volcanoartprize.com/submitentry/> by midnight at the end of the day, your timezone, on Monday 27<sup>th</sup> September 2021.

Once the entry deadline has passed, the Volcano Art Prize (VAP) 2021 Judge will choose the First Prize winner of \$400 and 30 prize winners of a mug from Pictureproducts and you can help pick the 2021 People's Choice prizewinner. Just go to <https://volcanoartprize.com/peoples-choice/> and following pages, to vote (by Facebook Like) for all the VAP 2021 entries you like, so that The LEAD Group can count up the Likes to see who wins the People's Choice Cash Prize of \$200.





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## Australia Lags the Developed World in Eliminating Lead from Drinking Water

*By Global Valve Technology, a Lead-Free Partner of The LEAD Group's Lead Safe World Project*

GVT have been committed to providing Australians, with its first 'Certified' and field-proven Lead-Free Water Meter. This is something that other advanced countries have committed to, by introducing rules requiring zero or very low lead levels in water meters and other plumbing products. Australia needs to follow suit!!



Unfortunately, it is cheaper to produce Brass Water Meters with a higher lead content, than it is to produce a low lead meter. Australian Regulations allow our lead content at a much higher level than is legal in Europe and North America. This is a real concern and one that the public are not fully aware of.

We believe that the lead in the Brass Water Meter, may make up a very significant proportion of the lead contamination in our drinking water.

We believe this because, a significant volume of water remains inside the meter, often for lengthy periods of time while residents are away and not using water. With the lead from the Brass Meter leaching into the water from a high lead content brass water meter, that is often in direct sunlight and very hot, accelerating the lead dissipation into drinking water. There have been a number of research papers that support this theory.

Given this, we think the Leaded Brass Water Meter may, therefore, be a much more significant source of lead than the tap and other plumbing fittings.

The 'Good News' is many Australian Water companies are now committed to using our Lead-Free Water Meter, with over 100,000 supplied so far.

Why take the risk with high lead levels in your water, when you can have installed GVT's Australian designed and owned water meter. No Lead, No Risk!

Support your health, you are just a phone call away from your Zero Lead Meter, which can be requested from your water supplier where possible, at no cost to you.



Ask your Water Authority for a ZLM (Zero Lead Meter)

**Lead Safety Message:** Within 10 days of asking Sydney Water for a Zero Lead Meter (ZLM) to replace my leaded brass water meter, this Global Valve Technology ZLM appeared!

**Volcano Art Prize 2019 Entry** by Elizabeth O'Brien

<https://volcanoartprize.com/portfolio-item/ask-your-water-authority-for-a-zlm/>

Go to

<https://www.facebook.com/GlobalValveTechnology> for updates on getting your ZLM installed.



# The end of leaded petrol has been achieved in July 2021!

## PCFV Media Conference 30<sup>th</sup> August 2021

[*Editor's note:* The structure of this article, the Agenda (and the Speaker Profiles below) for the Partnership for Clean Fuels and Vehicles (PCFV) of the United Nations, was emailed by Rob de Jong (Head, Sustainable Mobility Unit, Economy Division, UN Environment Programme) to PCFV members, and PCFV Member Elizabeth O'Brien of The LEAD Group Inc Australia, has edited in her notes from watching the Media Conference at <https://youtu.be/1daMpAWT8t0> .]

Welcome and background – moderator **Mr Mike Walsh** (3 min) Mike gives a potted history of leaded petrol since December 1921, Japan being the first country to phase it out; introduces how the PCFV was created, it's first focus: the lead campaign (to phase-out leaded petrol globally), and benefits of the phase-out of leaded gasoline.

Video **Mr Antonio Guterres**, UN Secretary General (3 min) celebrates a milestone in multi-lateralism across countries and sectors, protecting children's IQ and preventing one million premature deaths annually from heart disease, strokes and cancer, through the ending of leaded petrol. "We must turn the same commitment to ending the triple crisis of climate disruption, biodiversity loss and pollution. We need to shift from fossil fuels to renewable energy. We need global mobility with no emissions at all.... Let us take inspiration from the end of leaded fuel. Let us focus all our efforts at making peace with nature. Let's build a cleaner greener future for all."

**Inger Andersen, Executive Director UNEP** (3 min) – discusses how UNEP led the global campaign with 75 PCFV members, supported countries, and how we achieved a global phase out of leaded fuel, from which we can learn, applying these lessons to deal with carbon dioxide emissions from the transport session and other actions to end the triple planetary crisis.

**Luc Gnacadja, former Minister Benin** (3 min) – talks about Benin and sub Saharan Africa taking the lead by for instance banning the import of used vehicles which did not have catalytic converters, the benefits of this, and what is needed next for Africa – like lowering sulphur in gasoline and importing only used vehicles which meet European emissions standards.

**Ms Janet McCabe, US EPA Deputy Administrator** (3 min) – talks about the PCFV approach and lessons learned (based on the USEPA evaluation which estimates 1.2 million premature deaths per year are prevented by the phaseout of leaded gasoline), and about next issues, like other lead pollution sources (eg President Joe Biden has funded lead pipe replacement, the world needs to phase-out lead paint), tackling the climate crisis and the switch to zero emissions vehicle fleets.

**Brian Sullivan, IPIECA** (3 min) – speaks about the role of the oil and gas private sector [*Editor's note:* Innospec, the US company that manufactured the lead additive for leaded petrol in the United Kingdom and continues to manufacture the lead additive for leaded aviation fuel, is of course not a member of IPIECA and was not a Partner of PCFV despite my recommendation that they should have been].



The speakers are followed by a QandA session between press and the panel, moderated by Mike Walsh (40 min). [These notes of the Questions and Answers were transcribed/summarised by Elizabeth O'Brien.]

**Q: what were some of the major obstacles that PCFV had to overcome to achieve this great milestone?**

Janet: there were myths and bribery [*Editor's note: two cases in the US found Innospec guilty of bribery and Innospec's annual report to its shareholders consistently gave their aim as to maximise profits during the leaded petrol phase-out, which resulted in the phase-out being completed some 13 years later than the planned final phase-out year of 2008.*]

**Q: what's going to be done about leaded fuel in aviation?** Janet: US EPA is working with our Aviation Administration to phase it out in the US. Inger: we're also seeing action in Europe.

**Q: is there a plan to address soil contamination which has resulted from the use of leaded gasoline?**

Brian: that's not an industry issue. Janet: in the US we deal with legacy soil lead contamination through EPA Cleanup programmes and local public health programs to test lead in people's yards and manage the soil contamination through gardening practices, hygiene, control of track-in, etc.

**Q: can you describe the kind of resistance from TEL manufacturers and what it took to successfully counter those efforts? Does that resistance continue until today? Was any company other than Innospec involved?** Inger: some of our local partners were seriously threatened after trying to introduce unleaded gasoline. I already spoke about bribery and myths being propagated, and price differentials.

**Q: can the effort to get rid of leaded fuel be translated to phasing out coal?** Inger: yes, we can look at what it shaves off our GDP, how many people die, and we can look at alternatives and invest in R&D for that. Yes, the lead package presents lots of lessons but the phaseout of coal is a bigger ask. Janet: we need to focus on bringing alternatives to fossil fuels forward while raising everyone's quality of life. Luc: recognizing the cost of inaction – knowing that lead gasoline was costing 1.2% of Benin's GDP was important to the phaseout here. This information about the cost of fossil fuel use should be researched so it is specific to each country and this will move the change away from coal at a faster rate. Inger: we need to bust a number of myths about electric vehicles. We need to focus on exiting from fossil fuel use. Luc: we should ensure that no vehicle which should be dismantled is exported. Mike: we also need to bring about electrification of two-wheeled and three-wheeled vehicles too – not just cars.

**Q: can you explain what the claim of US\$2.45 trillion savings to the global economy due to the phaseout of leaded petrol, is based on, and what impact does the continued use of leaded Avgas have?** Inger: it comes from various scientific studies based on health/hospital costs, children's IQs and their lifetime income loss, premature deaths and the related income loss. Mike: the impact of 5 or 10 lost IQ points is incalculable really.

**Q: what were the sustainable alternatives to leaded petrol which were rejected at the start of the leaded petrol era?**

**Q: how did we determine that the final stockpile of TEL [tetra ethyl lead – the additive for making leaded petrol] in Algeria was used up, and is there a chance that black market supplies of TEL will continue to be used for some time?** Inger: there are independent bodies who take fuel samples from the market in countries across the world and check them in labs and UNEP does this ourselves too so that's how we know that in July 2021, there was no leaded petrol in these tests.



UNEP issued a press release/alert (see below) prior to the Media Conference and published the article below titled “PCFV Inside the 20-year campaign to rid the world of leaded fuel” (which should have been titled “...leaded petrol” because leaded aviation fuel is still the predominant fuel used globally in small aircraft including some helicopters). Additionally, Rob de Jong emailed Partners of the PCFV the following articles:- a background document and a timeline, which The LEAD Group has published below.

## Speaker Profiles



**Mr Michael P Walsh** is a renowned international expert on motor vehicles pollution and air pollution. He worked for the US Environmental Protection Agency (Director Motor Vehicles Emissions programme). After leaving government, he has been working as an independent expert/ consultant and has been involved in many leading initiatives and countries around the world to promote better air quality and cleaner vehicles. He is a senior advisor of the US and China Governments for their clean vehicles programs. And he is one of the founders of the International Council for Clean Transportation (ICCT), a leading global NGO on cleaner vehicles. Mike

has been working closely with UNEP and our clean fuels and vehicles programs: he was a founding member of the Partnership for Clean Fuel and Vehicles; he helped draft several important publications; has chaired working groups; and has supported the implementation of activities on the ground - in countries around the world. Mike is a recipient of the MacArthur Award (also called “genius award”).



**Mr Luc Gnacadja** served in the government of Benin as Minister of the Environment, Housing, and Urban Planning from June 1999 to February 2005. During his tenure he spearheaded the phase out of leaded petrol – with Benin being one of the first countries to go unleaded in Africa, and Benin being a strong supporter for the Sub Saharan Africa programme to go unleaded.

In September 2007, Luc Gnacadja was appointed as Executive Secretary of the United Nations Convention to Combat Desertification (UNCCD) by United Nations Secretary-General Ban Ki-Moon. Gnacadja's second term concluded at the end of September 2013. Luc Gnacadja is an honorary councilor of The World Future Council.



**Ms Janet McCabe**, US EPA Deputy Administrator

Janet McCabe was sworn in as Deputy Administrator in April 2021. Before this she was the Acting Assistant Administrator in the Office of Air and Radiation.

Prior to rejoining EPA, Janet McCabe was a Professor of Practice at the Indiana University McKinney School of Law and Director of the IU Environmental Resilience Institute. Her work at Indiana University centered on establishing innovative, research-informed, and actionable solutions to reduce environmental risks and help protect the health of



communities and families. Over the course of her career, McCabe has spent time working for state environmental agencies in Massachusetts and Indiana, with a focus on air quality issues.



**Mr Brian Sullivan** is the Executive Director of the International Petrol Industry Environmental Conservation Association (IPIECA). IPIECA, based in London and set up in 1974, is a global not-for-profit oil and gas industry association for environmental and social issues. IPIECA's mission is to assist "the oil and gas industry improve its environmental and social performance". All major oil corporations are members of IPIECA. IPIECA is the industry channel into UN's International Panel on Climate Change (IPCC), UNEP and the UNFCCC. IPIECA is an active PCFV member and actively supported the global campaign to eliminate leaded fuels. Before Brian joined IPIECA he has worked in BP.



**Ms Inger Andersen** is Under-Secretary-General of the United Nations and Executive Director of the United Nations Environment Programme, headquartered in Nairobi, Kenya.

Between 2015 and 2019, Ms. Andersen was the Director-General of the International Union for Conservation of Nature (IUCN). Between 1999 and 2014, Ms. Andersen held several leadership positions at the World Bank including Vice President of the Middle East and North Africa; Vice President for Sustainable Development, and Head of the CGIAR Fund Council.

Ms. Andersen has more than 30 years of experience in international development economics, environmental sustainability, strategy and operations. She has led work on a range of issues including agriculture, environmental management, biodiversity conservation, climate change, infrastructure, energy, transport, and water resources management and hydro-diplomacy.



## Era of leaded petrol over, eliminating a major threat to human and planetary health

Press release, United Nations Environment Programme (UNEP) <https://www.unep.org/news-and-stories/press-release/era-leaded-petrol-over-eliminating-major-threat-human-and-planetary>

- Official end of use of leaded petrol will prevent more than 1.2 million premature deaths and save USD 2.45 trillion a year
- The end of leaded petrol follows a 19-year campaign led by the UN Environment Programme (UNEP) and partners
- UNEP urges countries to work towards zero emissions vehicles to further address air pollution and climate change

Nairobi, 30 August 2021 – When service stations in Algeria stopped providing leaded petrol in July, the use of leaded petrol ended globally. This development follows an almost two decades long campaign by the UNEP-led global Partnership for Clean Fuels and Vehicles (PCFV).

Since 1922, the use of tetraethyllead as a petrol additive to improve engine performance has been a catastrophe for the environment and public health. By the 1970s, almost all petrol produced around the world contained lead. When the UN Environment Programme (UNEP) began its campaign to eliminate lead in petrol in 2002, it was one of the most serious environmental threats to human health.

2021 has marked the end of leaded petrol worldwide, after it has contaminated air, dust, soil, drinking water and food crops for the better part of a century. Leaded petrol causes heart disease, stroke and cancer. It also affects the development of the human brain, especially harming children, with studies suggesting it reduced 5-10 IQ points. Banning the use of leaded petrol has been estimated to prevent more than 1.2 million premature deaths per year, increase IQ points among children, save USD 2.45 trillion for the global economy, and decrease crime rates.

“The successful enforcement of the ban on leaded petrol is a huge milestone for global health and our environment,” said Inger Andersen, Executive Director of UNEP. “Overcoming a century of deaths and illnesses that affected hundreds of millions and degraded the environment worldwide, we are invigorated to change humanity’s trajectory for the better through an accelerated transition to clean vehicles and electric mobility.”

By the 1980s, most high-income countries had prohibited the use of leaded petrol, yet as late as 2002, almost all low- and middle-income countries, including some Organisation for Economic Co-operation and Development (OECD) members, were still using leaded petrol. The PCFV is a public-private partnership that brought all stakeholders to the table, providing technical assistance, raising awareness, overcoming local challenges and resistance from local oil dealers and producers of lead, as well as investing in refinery upgrades.

Dr. Kwaku Afriyie, Minister of Environment Science, Technology and Innovation in Ghana, said “When the UN began working with governments and businesses to phase out lead from petrol, sub-Saharan African nations enthusiastically embraced this opportunity. Ghana was one of five West African countries to join early sub-regional workshops and declarations. Following PCFV’s media campaigns, reports, studies, exposing illegalities, and public testing done to expose high levels of lead in the population’s blood, Ghana became ever more determined to free its fuel from lead.”

Despite this progress, the fast-growing global vehicle fleet continues to contribute to the threat of local air, water and soil pollution, as well as to the global climate crisis: the transport sector is responsible for nearly a quarter of energy-related global greenhouse gas emissions and is set to grow to one third





by 2050.

While many countries have already begun transitioning to electric cars, 1.2 billion new vehicles will hit the road in the coming decades, and many of these will use fossil fuels, especially in developing countries. This includes millions of poor-quality used vehicles exported from Europe, the United States and Japan, to mid- and low-income countries. This contributes to planet warming and air polluting traffic and bound to cause accidents.

“That a UN-backed alliance of governments, businesses and civil society was able to successfully rid the world of this toxic fuel is testament to the power of multilateralism to move the world towards sustainability and a cleaner, greener future,” Ms. Andersen said. “We urge these same stakeholders to take inspiration from this enormous achievement to ensure that now that we have cleaner fuels, we also adopt cleaner vehicles standards globally – the combination of cleaner fuels and vehicles can reduce emissions by more than 80%.”

In addition, while we have now eliminated the largest source of lead pollution, urgent action is still needed to stop lead pollution from other sources – such as lead in paints, leaded batteries, and lead in household items.

The end of leaded petrol is expected to support the realization of multiple Sustainable Development Goals, including good health and well-being (SDG3), clean water (SDG6), clean energy (SDG7), sustainable cities (SDG11), climate action (SDG13) and life on land (SDG15). It also offers an opportunity for restoring ecosystems, especially in urban environments, which have been particularly degraded by this toxic pollutant. Finally, it marks major progress ahead of this year’s International Day of Clean Air for blue skies on the 7th of September.

#### **About the Partnership for Clean Fuels and Vehicles (PCFV):**

In 2002, the Partnership for Clean Fuels and Vehicles (PCFV) was set up at the World Summit on Sustainable Development. UNEP hosted the Secretariat with the aim of eliminating leaded petrol globally and provided support to many countries and regional initiatives. At the time, 117 countries world-wide were still using leaded petrol with 86 countries supported to phase out leaded petrol. In 2006, the first major success was achieved – Sub-Saharan Africa went unleaded. The last country to switch was Algeria in July 2021.

#### **About the United Nations Environment Programme (UNEP)**

UNEP is the leading global voice on the environment. It provides leadership and encourages partnership in caring for the environment by inspiring, informing and enabling nations and peoples to improve their quality of life without compromising that of future generations.



Artist: Elizabeth O'Brien

Title: The world is cursed until TEL is banned,  
Lead-Safety Message: **When Tetra Ethyl Lead (TEL) is banned in Aviation Fuel as well as Motor Fuel, Earthlings will have a fighting chance of fulfilling our potential.**

Description of Work: Text created in Powerpoint, on Photo of Roman curse tablet (made of lead) © Marie-Lan Nguyen / Wikimedia Commons, from

[https://upload.wikimedia.org/wikipedia/commons/a/a0/Curse\\_tablet\\_BM\\_1934.11-5.1.jpg](https://upload.wikimedia.org/wikipedia/commons/a/a0/Curse_tablet_BM_1934.11-5.1.jpg)

URL: <https://volcanoartprize.com/portfolio-item/the-world-is-cursed-until-tel-is-banned/>



## Inside the 20-year campaign to rid the world of leaded fuel

By UNEP's Partnership for Clean Fuels and Vehicles (PCFV), 30<sup>th</sup> August 2021, <https://www.unep.org/news-and-stories/story/inside-20-year-campaign-rid-world-leaded-fuel-0>



On 9 December 1921 at a General Motors laboratory in Dayton, Ohio, chemists poured a teaspoonful of a compound called tetraethyl lead into a spasming motor.

They were hoping to stop what's known as 'knock' - the wild and potentially engine-destroying vibrations that come from burning low-grade petrol.

Almost immediately after adding the tetraethyl lead, the motor began to "purr", recounts Sharon Bertsch McGrayne in her book *Prometheans in the Lab*.

And so leaded petrol was born.

In the months to come, the fuel would be hailed as a breakthrough, one that would power a new generation of cars, planes and motorcycles.

There was just one problem: leaded exhaust is toxic. As leaded fuel spread to every corner of the world, it was followed by epidemics of heart disease, cancer, stroke and, most vividly, developmental delays in children.

"Leaded petrol was a huge mistake from the start, even if people may not have known it at the time," said Rob De Jong, the head of sustainable mobility at the United Nations Environment Programme (UNEP). "The world would be dealing with the consequences for a century."

Today that toxic legacy officially came to an end. At a press conference in Nairobi, Kenya, UNEP announced



the last country to use leaded petrol, Algeria, had phased out the fuel. For the first time since 1923, no driver on the planet will be legally able to fill their tank with lead-infused petrol.

“The successful enforcement of the ban on leaded petrol is a huge milestone for global health and our environment,” said UNEP Executive Director Inger Andersen.

The announcement followed a two-decade-long campaign, led by UNEP, to help the world abandon leaded fuel. The drive, part of the [Partnership for Clean Fuels and Vehicles](#), used a mix of science, public education, policy work and shame to score a stunning environmental victory. Estimates have found that every year, leaded fuel bans save more than 1.2 million lives while helping the global economy avoid \$2.4 trillion in healthcare expenses and other costs.

“I think this may be the single biggest success story in the environmental field,” said Michael Walsh, the former head of motor vehicle pollution control programmes with the United State’s Environmental Protection Agency.

### **The toxic history of lead**

Lead has long been known to be toxic. Ancient Romans were aware it could cause [madness and death](#), though that didn’t stop them from using it in pipes, paints, cosmetics and as a wine sweetener.

In the 17<sup>th</sup> century, French nobility routinely [poisoned familial rivals](#) with lead, earning it the nickname *poudre de la succession*, or inheritance powder.



***Despite its toxic origins, leaded fuel spread like wildfire, reaching petrol pumps in every country on Earth. Photo: Shutterstock***

But for the burgeoning automotive industry in the 1920s, lead was a prayer answered. It was a cheap way to raise the octane level of fuel, allowing a smoother burn and ending the problem of “knock”, which could damage engines.

But not long after leaded petrol went on sale, workers at tetraethyl lead factories began to die: two perished in Ohio, four in Delaware, five in New Jersey.

The inventor of leaded petrol, Thomas Midgely, who had a habit of smearing tetraethyl lead on his hands to prove it was safe, would come down with a severe case of lead poisoning, McGrayne wrote in her book.

Despite its toxic origins, leaded fuel would spread like wildfire through the 1970s, reaching petrol pumps in every country on Earth.

As it did, its impact on human health became clear. As early as the 1950s researchers realized that leaded exhaust was toxic and, in the decades to come it would be linked to high blood pressure, kidney failure, anemia, blindness, infertility and other disorders.



But it was [a 1979 study](#) by American pediatrician Herbert Needleman that would galvanize a global movement against leaded fuel. Analyzing the lead content in the teeth of schoolchildren, Needleman found the chemical robbed kids of IQ points and caused a host of behavioural problems.

Over [the next two decades](#), dozens of countries – from Japan, to Germany, to the United States – would abandon leaded gas. But the fuel remained entrenched in many places, including much of the developing world.

### **The partnership begins**

In 2002, at the United Nations-backed World Summit on Sustainable Development in South Africa, a group of environmentalists, scientists, government officials and business leaders came together to form the [Partnership for Clean Fuels and Vehicles](#). Its goal: stamp out leaded petrol

The alliance thrust together clean air campaigners and oil industry executives – two groups who in the past had gone toe-to-toe over other emissions standards.

“This type of partnership had never been tried before,” recalled De Jong, one of its architects. “Some people said it would never work.”



***A study from California State University found that every year, bans on leaded fuel saves the lives of 1.2 million people, including 125,000 children. Photo: Shutterstock***



Some founding members were angered that decades after being phased out in rich countries like the United States, leaded petrol was still being sold in poor ones.

"They were getting the dirtiest fuel. It was very frustrating," said Walsh, the former EPA official who is now a consultant. "The people that were most vulnerable were getting poisoned."

At the time, leaded petrol was still being used in 117 countries, including all of Africa, where it was having a devastating effect in fast-growing cities, like Lagos, Cairo, and Nairobi, said De Jong.

### **The focus on Africa**

The media had begun to catalogue the toxic trail of the fuel, which provided the partnership with an opening. Spearheaded by De Jong and a team of 15 UNEP staffers, the alliance launched a multi-pronged campaign to get Africa off leaded petrol.

It helped governments update air pollution standards, many of which dated to colonial times. It published [a study to debunk](#) the urban legend that unleaded fuel would damage engines. It funded blood testing in places like Ghana and Kenya, which found dangerously elevated levels of lead in children's blood.

Using what De Jong described as a "market approach", UNEP staffers also lobbied petrol-importing countries to buy their fuel from the global market if local producers refused to churn out unleaded petrol.

Finally, partnership members, which included oil engineers, provided "boutique solutions" that allowed African refineries to switch over to unleaded fuel, said Rob Cox, the technical director of [IPIECA](#), an oil and gas industry association specializing in environmental and social issues.

"Bit by bit, we broke down the barriers," said Cox. "As we went through it, we suddenly became conscious that what we were doing was really special."

Progress was fast. By 2006 all of Sub-Saharan Africa was lead free, an accomplishment the *Washington Post* called an unheralded success of international environmental diplomacy.

It also ushered in a new era of regional cooperation in places like East Africa, said Wanjiku Manyara, a founding member of the partnership and the Executive Director of the Petroleum Institute of East Africa.

The elimination of leaded petrol showed "Africa has the power to demand clean fuels from suppliers," said Manyara. "It raised the bar ensuring that the dumping of poor-quality fuels cannot take place."

### **In the trenches**



While success in Sub-Saharan Africa was quick, the rest of the world would prove to be a slog.

It would take 15 years to persuade the remaining countries – which were clustered in North Africa, the Middle East, Central Asia and Eastern Asia – to abandon leaded fuel.

In some of those places, the Partnership for Clean Fuels and Vehicles faced stiff resistance from the world’s last remaining maker of tetraethyl lead, Innospec, which was based in the United States and the United Kingdom.

In 2010, with the market for tetraethyl lead cratering, the company pleaded guilty to bribing Indonesian and Iraqi officials to secure sales, according to court records in the [United States](#) and the [United Kingdom](#).



***Air pollution kills about 7 million people annually. Much of that pollution, including small particulates known as PM 2.5, comes from tailpipe emissions. Photo: Angelo Doto/UNEP***

Still, the partnership continued to register victories, including in some of the world’s most isolated countries, like the Democratic People’s Republic of Korea, where UNEP staff met with officials eager to transition away from leaded fuel, De Jong said.

### **The end of the line**

At partnership meetings, De Jong and colleague Jane Akumu would show a map of the world with leaded countries in red and unleaded ones in blue. As the years passed, the reds became few and far between.

“We could see from relatively early on that it wasn’t hopeless,” said Walsh. “There was a feeling of growing momentum, that ‘Yeah, we’re going to do this.’ In the meantime, we’re helping a million people here and a million people there.”



By 2020, Algeria was the last country on earth where drivers could buy leaded petrol. But in September last year, the government announced state-owned oil company Sonatrach would stop making the fuel and over the next 10 months Algeria decontaminated its storage facilities and distribution networks. In July, the government confirmed that service stations were no longer selling leaded petrol, 99 years and seven months after its invention.

“It was a proud moment for the sustainable mobility team and partners,” said UNEP’s Akumu, referring to the unit leading the campaign against leaded fuel. “We joked that we could now put in our retirement papers.”

There was no popping of champagne, though. “It was more like ‘Finally we’re done’,” said De Jong laughing.

In all, the partnership helped 86 countries wean themselves off leaded fuel.

“It was a sweet spot,” said Cox, a former oil industry engineer who is set to retire this fall. “The timing was right. The people were right. It is something that has affected me.”



***In all, the Partnership for Clean Fuels and Vehicles helped 86 countries wean themselves off leaded fuel. Photo: UNEP***

The phasing out of leaded petrol has had a profound effect on the world. [A study](#) from California State University found that every year, it saves the lives of 1.2 million people, including 125,000 children who would otherwise die prematurely from cardiovascular, renal and neurological diseases.

Because lead exposure in childhood leads to behavioural problems, including violence in adulthood, the end of leaded fuel also prevents some estimated 58 million crimes annually. As well, it saves the global economy \$2.4 trillion in medical bills, lost wages, incarceration charges and other expenses every year.

Perhaps as importantly, it unlocked the widespread use of catalytic converters, filters installed on the exhaust systems of all petrol cars. These filters, which can be destroyed by a single tankful of leaded fuel, scrub out a





host of toxic chemicals, like carbon monoxide and nitrogen oxides, making vehicles up to 90 per cent cleaner.

### **Hope for the future**

While leaded petrol may be gone, air pollution still kills about 7 million people annually. Much of it comes from tailpipe emissions, including small particulates known as PM 2.5 that can penetrate deep into the respiratory tract, causing [asthma and heart disease](#). Ultimately, De Jong says, the world will need to transition to zero emissions electric vehicles if it wants to conquer air pollution.

Still, observers say the end of leaded petrol is an encouraging step with humanity [staring down the barrel](#) of another environmental catastrophe: climate change.

“I’m certainly not a Pollyanna about climate change,” said Walsh. “But at least we can say ‘We solved (the leaded fuel) problem. Let’s do something similar’. It gives me hope.”



# Removing Lead from Petrol

**-The Global Campaign of the UNEP-led Partnership for Clean Fuels and Vehicles to eliminate the global use of Leaded Petrol -**

*Rob de Jong*

*Head, Sustainable Mobility Unit*

*UN Environment Programme*

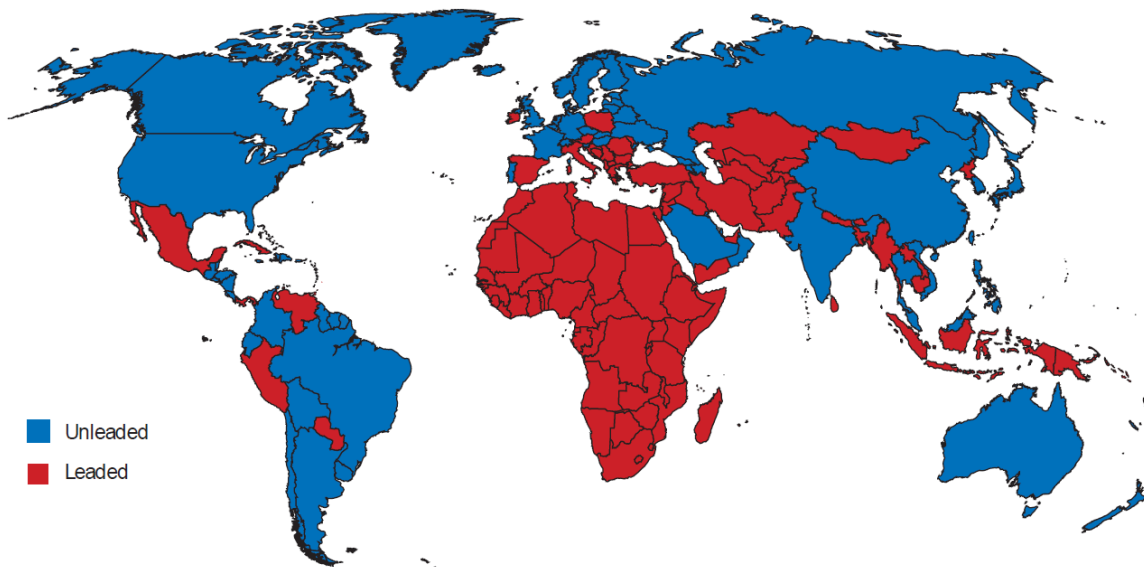


When we started...

- In 2002, 117 countries were still using leaded petrol.....



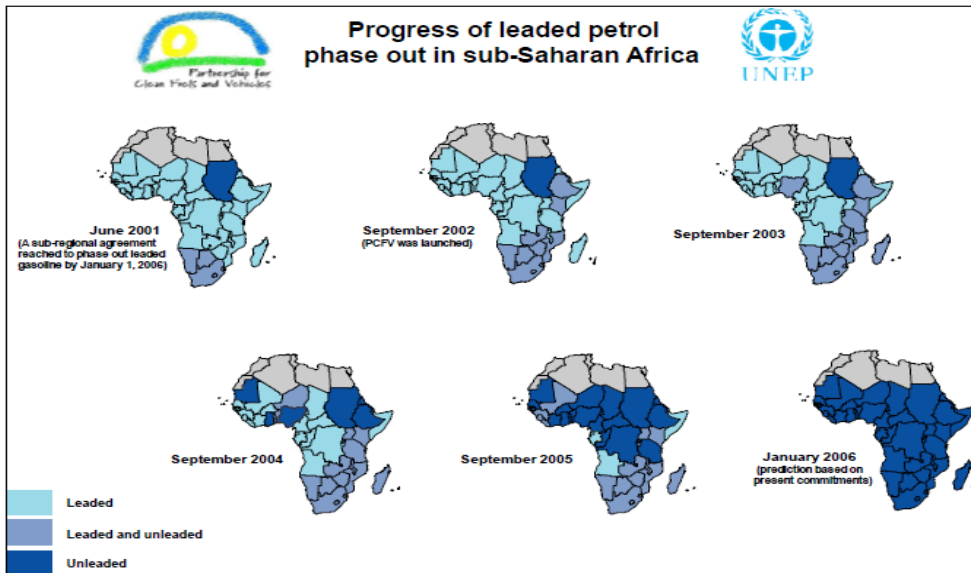
Leaded Petrol Phase-Out: Global Status



Status as of 2002

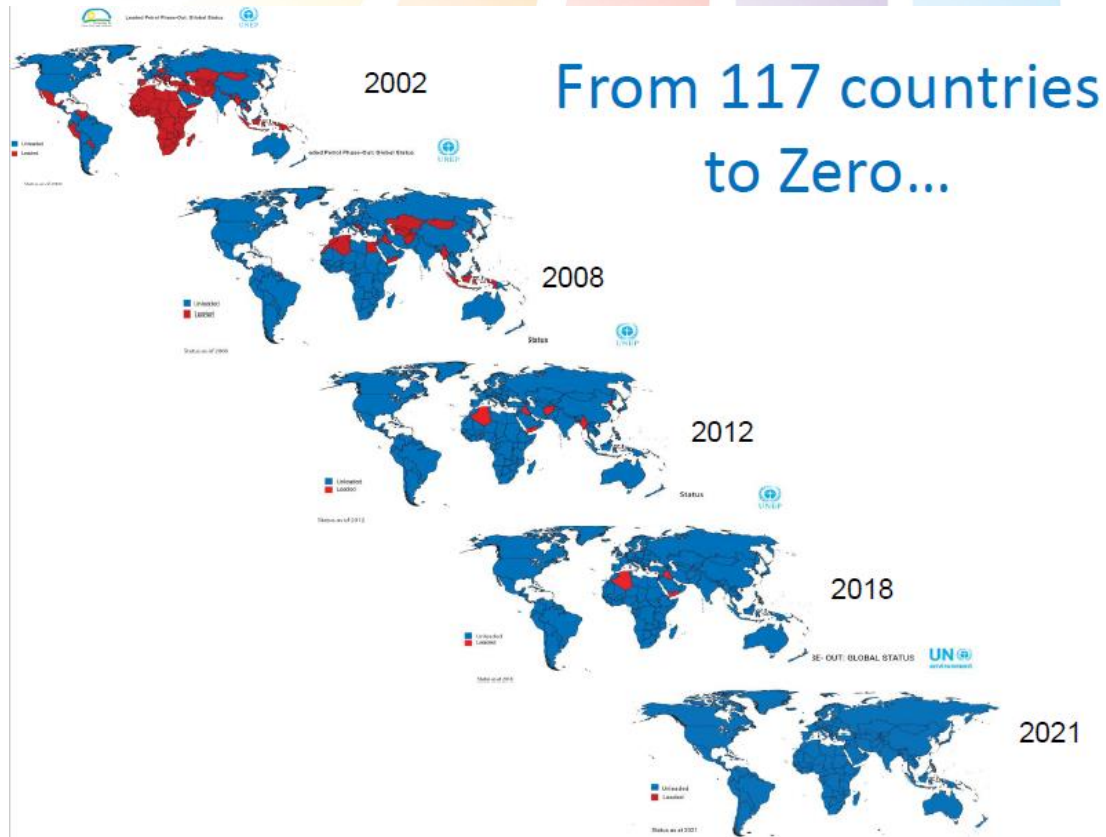


## Priority Africa...



## Remaining in 2008

Using leaded fuel - beginning 2008	Current Status September 08	Current estimate Likely to go Unleaded - PCFV
Afghanistan	On track	2008
Algeria	Revision	2013
Bosnia-Herzegovina	In dialogue	2010
Iraq	To contact	2011
Jordan	Unleaded	
FYR Macedonia (2008)	On track	2009
Lao PDR	Unleaded	
Mongolia	Unleaded	
Montenegro	On track	2009
Morocco	On track	2008
Myanmar	To contact	2010
North Korea	To contact	2010
Palestine	Unleaded	
Serbia	In dialogue	2010/2011
Tajikistan	To contact	2010
Tunisia	On track	2008
Uzbekistan	To contact	2009
Yemen	Revision	2009
<b>18 countries</b>	<b>14 countries</b>	<b>End 2008: 11</b>
<b>New Additions</b>		
Bhutan		To re-check, we have them presently as unleaded
Egypt	Added to the list	2010
<b>Total</b>	<b>15</b>	



## The Benefits The Global Benefits of Removing Lead from Gasoline

Extrapolating from US benefits to global benefits, global annual benefits are estimated at:

- *GDP = \$2.44 trillion / year*
- *IQ = 322,286,258 points/year*
- *Adult mortality = 1,089,028 premature deaths/year*
- *Child mortality = 125,403 premature deaths/year*
- *Crime = 58,691,014 cases/year*

Source: Hatfield and Tsai, California State University, 2010



# Long Lasting Effects...

*Lead exposure in childhood appears to have long-lasting negative effects on mental health and personality in adulthood, according to a study of people who grew up in the era of leaded gasoline.*

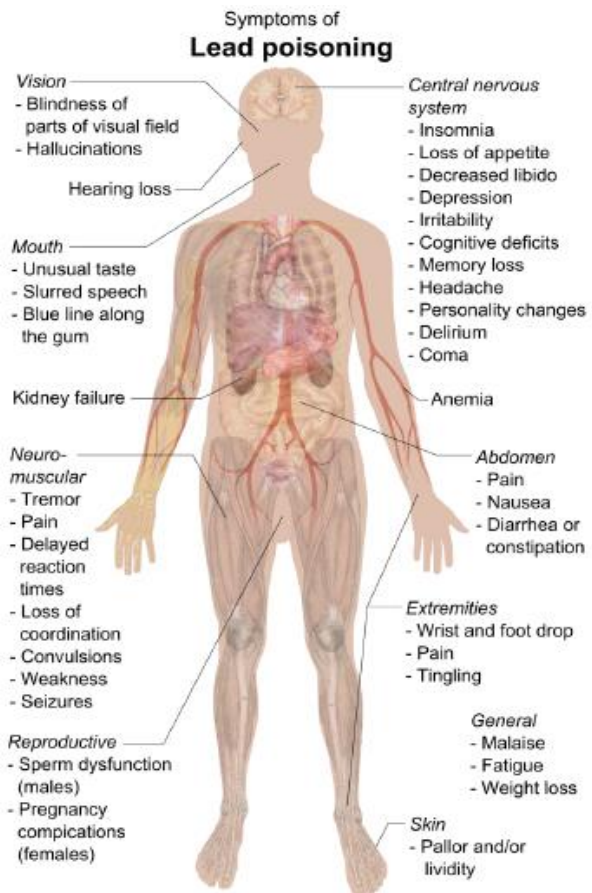
*The findings reveal that the higher a person's blood lead levels at age 11, the more likely they are to show signs of mental illness and difficult personality traits by age 38.*

Duke University, 2019

## Health

### Health Impacts

- High blood pressure
- Kidney damage
- Brain damage
- Anemia
- Nervous system
- Unborn child nervous system and brain



Source: Mikael Häggström - <https://commons.wikimedia.org/w/index.php?curid=40804069>



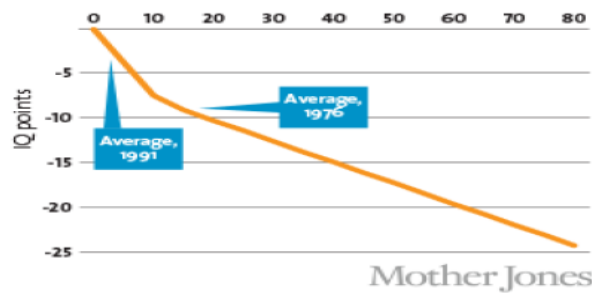
# Mental Development

## Lead Impacting IQ

### DID LEAD MAKE YOU DUMBER?

Even low levels have a significant effect.

Blood lead level in  $\mu\text{g}/\text{dL}$  (children under 6)



Mother Jones

Source: Mother Jones, 2016 <http://www.motherjones.com/environment/2016/02/lead-exposure-gasoline-crime-increase-children-health>

# Crime

## Crime and Leaded Petrol

Lead exposure and violent crime, USA



Source: R. Nevin

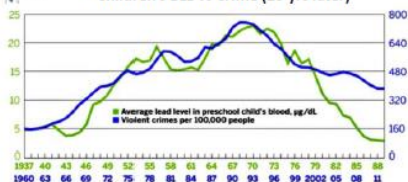
**Lead: America's Real Criminal Element**

The hidden villain behind violent crime, lower IQs, and even the ADHD epidemic.

KEVIN DRUM FEB. 11, 2016, 9:32 PM

[f](#)
[t](#)
[e](#)

Children's BLL vs Crime (23 yrs later)



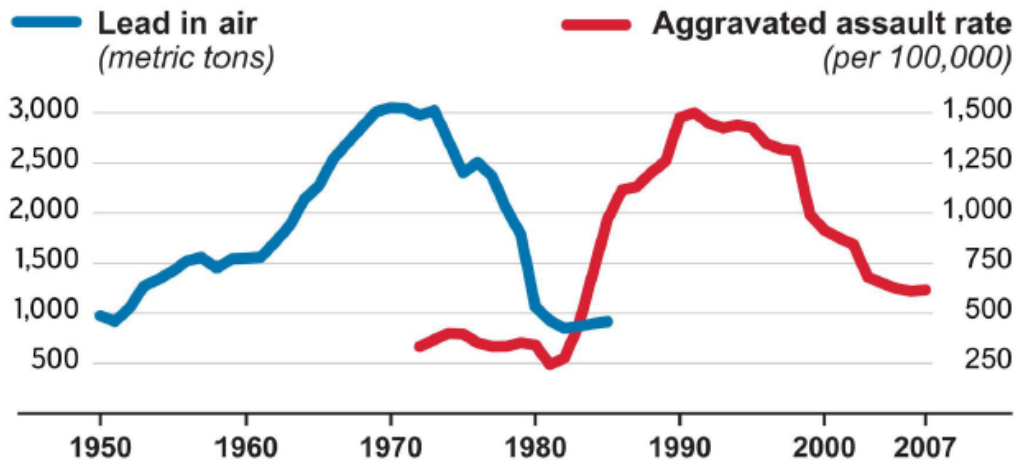
A timeline of lead reduction

<b>1970</b> CDC sets acceptable blood-lead level of 40 $\mu\text{g}/\text{dL}$ .	<b>1973</b> EPA mandates a phaseout of leaded gasoline.	<b>1978</b> CPSC bans residential lead paint.	<b>1991</b> CDC sets acceptable blood-lead level of 10 $\mu\text{g}/\text{dL}$ .	<b>1996</b> EPA eliminates lead from all U.S. motor fuel.	<b>2012</b> CDC describes blood-lead level of >5 $\mu\text{g}/\text{dL}$ as elevated.
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# Chicago – Crime vs Lead

Trends in lead pollution, assault rates in Chicago

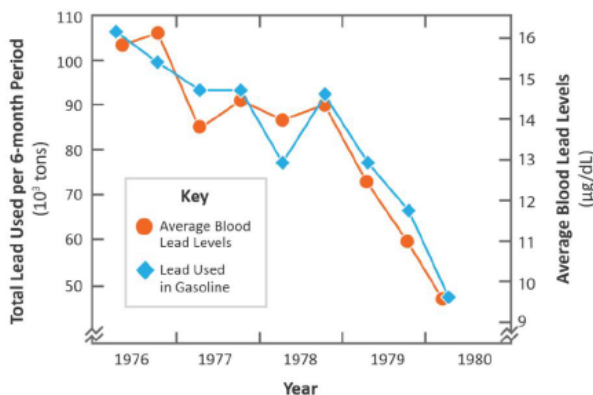


Sources: Howard Mielke, Tulane University School of Medicine, Sammy Zahran, Colorado State University

@ChiTribGraphics

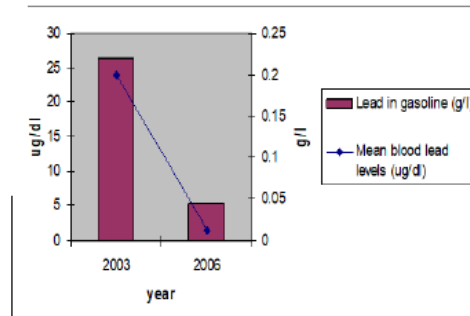
## The Evidence Relation Blood Lead Levels and use of Leaded Fuels

Lead Content in Gasoline and Average Blood Lead Levels



<https://www.epa.gov/transportation-air-pollution-and-climate-change/accomplishments-and-success-air-pollution-transportation>

Ghana Blood lead levels



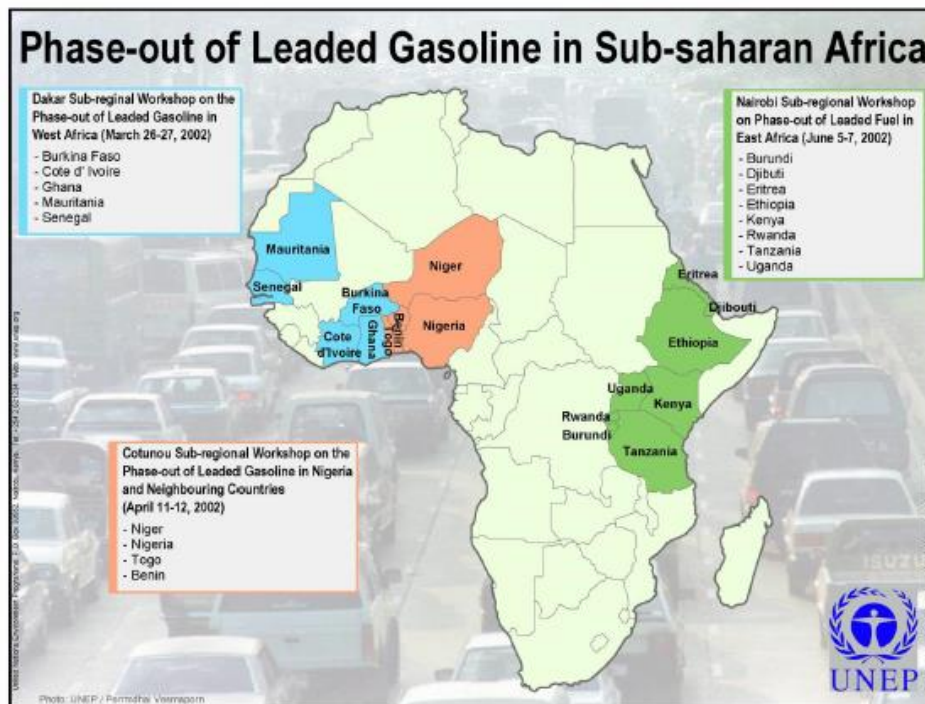


# The Actions

## WSSD – creation PCFV



## Sub-regional/ Markets approach





# Regional and National Support



Laos



Burundi



Cairo



Yemen



Montenegro



Ecuador

## Media campaigns



### Get the lead out!

The benefits of phasing out leaded fuel far outweigh the costs of continued use. The question is: how do we win ourselves off this deadly pollutant? A new campaign may provide some answers.

CAMPAINS AND STRUGGLES

The 1920s Clean Air Act's discovery that leaded gasoline caused neurological damage led to the phasing out of leaded gasoline in the United States. In 1970, the health risks of leaded gasoline were recognized by the EPA. The implementation of the lead phase-out led to a 10% reduction in leaded gasoline use in the United States. The EPA's estimate of the health benefits of the lead phase-out is \$1.5 billion per year. The EPA's estimate of the health benefits of the lead phase-out is \$1.5 billion per year. The EPA's estimate of the health benefits of the lead phase-out is \$1.5 billion per year.



### Leaded fuel to be banned in SA from January 2006

Environmental and health needs lead to decision that makes good business sense.

**BY MICHAEL SIKORA**

It is a decision that will be made in South Africa's Parliament in the next few weeks. It will be a decision that will be made in South Africa's Parliament in the next few weeks. It will be a decision that will be made in South Africa's Parliament in the next few weeks.

### Sonatrach augmente ses capacités de raffinage

SONATRACH prévoit d'augmenter sa capacité de raffinage jusqu'à 25 millions de tonnes de pétrole brut à l'issue du programme d'investissements pour la réhabilitation des raffineries de Skikda, Arzew et d'Alger. Au plan de la production de gaz-pétrole, Sonatrach va produire une quantité supplémentaire de plus de 3 millions de tonnes par an, soit près de 10 millions de tonnes globalement. S'agissant de celle des essences, elle passera à plus de 4 millions de tonnes par an, alors que toutes les raffineries pourront produire de l'essence sans plomb. La production actuelle de raffinage de Sonatrach est de plus de 22 millions de tonnes de traitement annuel de brut et 5 millions de tonnes de condensat à travers cinq raffineries par carburation, de dix lubrifiants.

### Projekat poboljšanja kvaliteta goriva u Crnoj Gori u završnoj fazi

#### Upotreba olovnog goriva samo do kraja godine

Od 1. januara 2011. godine neće biti dozvoljeno is korišćenje goriva iz imena već sadržaj sumpora od dizeljnog

### Stroža kontrola benzinskih pump

Poljudica, u Crnoj Gori od januara 2011. godine biće zabranjena upotreba olovnog goriva, a od 1. januara 2011. godine biće zabranjena upotreba goriva iz imena već sadržaj sumpora od dizeljnog

### UREDBOM O KVALITETU NAFTNIH DERIVATA CRNOGORSKI PROPISI USKORO ĆE BITI UKLAPENI SA EVROPSKIM

### Bez olovnog benzina od Nove godine

Gradnja neće biti odložena. Uredba o kvalitetu naftnih derivata Crnogorski propisi uskoro će biti uklapeni sa evropskim

**ПОБОЉШАЊЕ КВАЛИТЕТА НАФТНИХ ДЕРИВАТА**

## Стоп за оловно гориво

Употреба оловног горива на граници биће забрањена у Србији и БиХ, али ће се и даље моћи рафинирати и сипати у гориво оловним додацима. Коначни суспензија у гориво оловним додацима, што ће значајно смањити загађење животне средине. Реакција је да ће гориво са оловним додацима бити забрањено од 1. јануара 2011. године.



# Testing



PAUL SHEPHERD  
UNIVERSITY OF CALIFORNIA, RIVERSIDE  
CE-CERT  
RIVERSIDE, CA 92521

Date Reported: 6/6/02  
Date Received: 5/28/02

### Analytical Report

Test	Result	Units	Method	Date	Analyst
Sample Number: 129704-001			Sample ID: LI, GASOLINE		
Sample Date: 3/16/02			Description:		
Lead in Gasoline	0.016	g/gal	ASTM D-2237	6/5/02	DD
Manganese in Gasoline	< 0.010	g/gal	ASTM D-3831	6/6/02	DD
Total Sulfur	81.1	ppm wt	ASTM D-5453	6/6/02	GMS

# Publications





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### Phase-out of leaded petrol brings huge health and cost benefits – UN-backed study





# Regional Political Declarations

## REGIONAL CONFERENCE ON THE PHASING-OUT OF LEADED GASOLINE IN SUB-SAHARAN AFRICA

### Declaration of Dakar

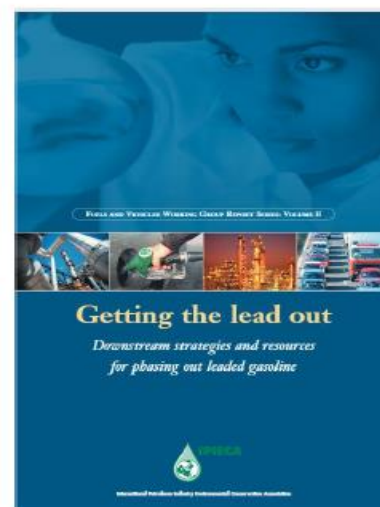
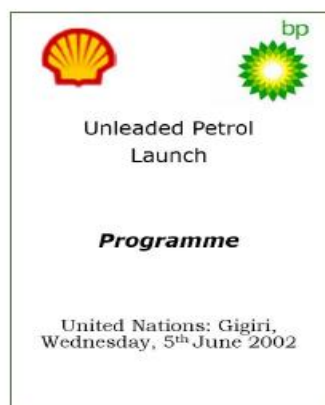
The participants from 25 Sub-Saharan African countries, representing governments, industry and civil society, and from international organizations attending the Regional Conference on the Phasing Out of Leaded Gasoline (Dakar, June 26 – 28, 2001), considering:

- The recommendations and resolutions of WHO, WB and UNEP stating the high priority of lead phase out worldwide,
- That surveys on blood lead levels in SSA city populations show that in many cases WHO guidelines : exceeded, bringing in particular at risk children's development and intellectual performance.
- That delays to start using unleaded gasoline are precluding the introduction of vehicles equipped with catalytic converters and thus the development of urban clean air policies in growing cities of SSA.
- The support expressed by the oil industry and the NGO community in favor of a prompt government action phasing out leaded gasoline.

agree to:

1. Join efforts to accelerate the formulation and implementation of programs to completely phase out leaded gasoline in all SSA countries as soon as possible, latest by 2005.


## Working with the Industry





## Awareness

**Improve your childrens IQ.**



**Switch to unleaded petrol**

Atmospheric lead from leaded petrol is causing a significant IQ loss in children. By eliminating lead, Unleaded Petrol allows children's minds to develop normally.

UNLEADED PETROL Make a clean switch today

**Double the life of your exhaust pipe.**




**Switch to unleaded petrol.**

Because acidity levels are much lower in Unleaded Petrol, engine corrosion is minimized so your exhaust pipe and muffler will last twice as long.

UNLEADED PETROL Make a clean switch today

**Save 80% on spark plugs.**



**Switch to unleaded petrol.**

By eliminating lead deposits on electrodes, Unleaded Petrol increases spark plug life by 80%.

UNLEADED PETROL Make a clean switch today.

## Challenges.....

### UK firm Octel bribed Iraqis to keep buying toxic fuel additive

Exclusive: Officials in Iraq were bribed to overlook effects of leaded petrol on children's health

### Three men jailed over the bribing of Indonesian and Iraqi officials

Prison sentences follow Serious Fraud Office investigation into bribes paid to increase sales of toxic fuel additive tetraethyl lead



### Innospec's \$40 Million Global Settlement

Richard L. Cassin March 18, 2010 7:56 pm



Specialty chemical maker Innospec Inc. resolved more than a dozen criminal charges in the U.S. and U.K. today, including Foreign Corrupt Practices Act (FCPA) and U.N. oil for food program offenses, and violations of the U.S. embargo against Cuba.

The Delaware company pleaded guilty to a 12-count criminal information charging wire fraud in connection with kickbacks to the former Iraqi government under the U.N. oil for food program, as well as FCPA violations for bribes to officials in the Iraqi Ministry of Oil. It will pay a \$14.1 million criminal fine and retain an independent compliance monitor for three years.



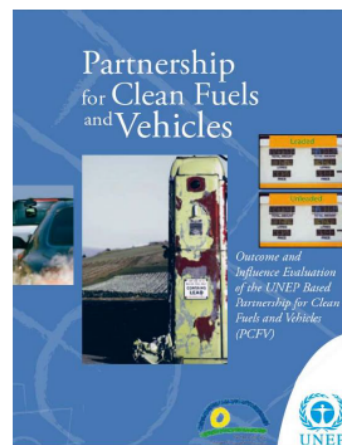
# The Success Formula

## What Independent Evaluations said about the PCFV Lead Campaign.....

*Separate independent evaluations were conducted by the US, EU, and UNEP. They found the following...*

*PCFV lead campaign success factors:*

- Intervention design well-focused on its objectives
- Comprehensive composition of the Partnership
- Ability to support multi-level processes
- Approach tailored to available finance
- High quality management and staff



## Independent Evaluations...

*And about the PCFV partnership design:*

- Clear objectives and commonly agreed goals
- Timescale with milestones
- Early attention to high level political commitment
- Each partner makes a unique contribution and is essential for success
- Clear governance rules and structure
- Ability to listen and compromise
- Monitoring system for compliance

PARTNERSHIP FOR CLEAN FUELS AND VEHICLES  
GOVERNANCE RULES

1.0 The Partnership

1.1 These are the rules that govern the Partnership for Clean Fuels and Vehicles, as adopted by the Partners during the Annual Partnership Meeting held on 11 and 12 December 2003 in The Hague, The Netherlands.

1.2 The Partnership was launched at the World Summit on Sustainable Development in Johannesburg in September 2002 by governments, international organisations, industry, and non-governmental organisations (NGOs).

1.3 The Partnership's goals are presented as the Mission Statement (Annex I).

2.0 Membership

2.1 The Partnership is open to any government, international organisation, industry organisation, non-governmental organisation or academic institution that supports the Mission Statement of the Partnership. Organisations may join as full Partners, and individuals with relevant expertise may join as Associate Partners. Associate Partners have all the same rights and responsibilities as Partners except for voting privileges.

2.2 Membership is subject to Steering Committee review, objections by the Steering Committee to membership applications will be forwarded to the Partnership for a final determination under the voting rules of Section 5.7. The same rules of procedure are necessary to suspend membership.

3.0 The Steering Committee

3.1 The Steering Committee is a representative group of all Partners established to facilitate Partnership activities. It will direct Partnership activities as:



## Leaded Petrol Timeline

By the Partnership for Clean Fuels and Vehicles (PCFV) of the UN, 23<sup>rd</sup> August 2021

This document tells the story of leaded petrol, from its first commercial use, through its spread and the campaign to end it, until its complete phase-out in 2021.

Until 1922:

- Lead had been known to be toxic as early as Roman times.
- In the mid-19<sup>th</sup> century Tetraethyllead (TEL) had been identified chemically and its effectiveness was discovered in 1921 by the General Motors research laboratory. TEL was first being mixed with gasoline to enable engines to use higher compression ratios, which made cars more powerful.

1922:

- TEL was patented that year by American chemist, Thomas Midgley.

1924:

- When medical doctors and journalists began raising alarm in 1924, after the poisoning and death and hospitalization of several workers, Thomas Midgley dismissed all concerns regarding leaded petrol. Those concerns were well understood by Standard Oil, General Motors and the DuPont Corporation, three companies involved with adding tetraethyl lead to gasoline.
- In the following years, production processes improved, though little did they do to make leaded petrol safe. It continued polluting air, soil and causing neurological harm to people.

1960s:

- Despite concerns, the US Surgeon General set a voluntary standard of lead content, which the refining industry successfully met for decades. It was not until the 1960s, following extensive independent health research (all studies of the use of TEL were conducted until then by laboratories and scientists funded by the Ethyl Corporation and General Motors), that the devastating health impacts of low-level lead exposure were established.

1970:

- Until approximately 1970 almost all gasoline used around the world contained lead, though Congress passes the *Clean Air Act*. The Environmental Protection Agency (EPA) in the USA was formed and given the authority to regulate compounds that endanger human health.

1973:

- EPA mandates a phased-in reduction of lead content in all grades of gasoline.

1974:

- EPA requires availability of at least one grade of unleaded gasoline, in order to be compatible with 1975 make and model year vehicles.

1975:

- Environmental legislation began to restrict the use of lead additives in automotive gasoline. This followed a steady movement away from leaded fuel, driven by concerns about the health effects of lead and because the catalytic converters (exhaust filters in modern vehicles than filters between 70-95% of common air pollutants) are rendered inoperable by lead.

1986:

- Complete phase out of leaded petrol in Japan.



1990s:

- In the 1990s, rates of violent crime started to go down in the USA. Economist Jessica Reyes linked 56% of this drop to a decrease in children's brain poisoning with the decrease in leaded petrol fumes after the passing of the clean air legislation. Other researchers have found similar links between lead water pipes and urban homicide. According to Reyes, crime costs about 20 times more the cost of de-leading petrol (before considering additional costs of TEL to human and ecological health).

1993:

- Complete phase-out of leaded petrol in Austria and Canada.

1994:

- Complete phase out of leaded petrol in Slovakia.
- At the Summit of the Americas, Heads of State from a number of countries pledged to develop national action plans for the phase out of leaded gasoline in the Western Hemisphere.

1995:

- Complete phase out of leaded petrol in Denmark and Sweden.
- According to the Environmental Health Criteria Document for Lead, published by the International Programme on Chemical Safety (IPCS), lead affects many organs and organ systems in the human body, with subcellular changes and neurodevelopmental effects evident.
- A recommendation of the 3rd "Environment for Europe" Ministerial Conference, held in Sofia, Bulgaria, in October 1995, called for the reduction and ultimate phase out of lead in gasoline.

1996:

- Complete phase out of leaded petrol in Germany and the USA, after EPA bans the use of leaded fuel for on-road vehicles.
- The World Bank called for a global phase out of leaded gasoline, and offered to help countries design feasible phase out schedules and create incentive frameworks.
- The second UN Conference on Human Settlements, Habitat II, included the elimination of lead from gasoline as a goal in its agenda.
- OECD Environment Ministers adopted a Declaration on Risk Reduction for Lead in which they declared they would give highest priority to actions such as a progressive phase-down of the use of lead in gasoline.

1997:

- Environmental ministers from the Group of Seven plus Russia endorsed the phase out of leaded gasoline in their Declaration of Environmental Leaders of the Eight on Children's Environmental Health.

1999:

- China banned the production of leaded gasoline in 1999, though the phase out was done through the early 2000s.
- The European Council of Ministers of Transport endorsed a resolution which calls on ECMT Member countries to phase out the use of leaded petrol as rapidly as possible.
- **Unleaded gasoline accounted for 80 per cent of total worldwide sales. In a significant portion of the remaining 20 percent, the lead content has been reduced.**

2000:

- China officially phased out leaded petrol
- In India, leaded petrol officially was phased out in 2000





- In most industrialized countries, a phaseout of TEL from road vehicle fuels was completed by the early 2000s, as the need for TEL was lessened by several advances in automotive engineering and petroleum chemistry.

2001:

- Dakar Declaration where 25 Sub-Saharan African countries, representing governments, industry and civil society, agreed to phase out leaded petrol by 2005.

2002:

- Sub-regional Workshop on the Phasing out of Leaded Gasoline in East Africa held at UNEP Headquarters.
- Leaded petrol was completely phased out of Australia
- 117 countries around the world were still using TEL
- airborne lead pollution from vehicle exhaust was considered the number one environment–health issue. Studies estimate that at the time the use of leaded petrol worldwide was causing 1,2 million premature deaths annually and causing reduced mental development of children – losing between 5 to 10 IQ points. It was also causing widespread health and behavioral problems.
- UNEP is hosting the Secretariat of the Partnership for Clean Fuels and Vehicles (PCFV). The Secretariat leads the implementation activities of the PCFV. The PCFV was created as a public-private initiative at the World Summit on Sustainable Development, with UNEP, the US Government, the Netherlands Government, the oil industry, and others who have played an important role in creating the partnership. It has 73 members, including – governments, industry, international organisations and independent experts.
- From 2002 until 2021, PCFV launched media campaigns; supported national programs; helped develop fuel standards; helped negotiate regional roadmaps; organized working groups; and issued technical publications to, for example, debunk myths around unleaded petrol.

2004:

- Second Sub-Saharan Africa Conference on leaded petrol status held at UNEP Headquarters.

2005:

- The PCFV partners agree to a new global leaded petrol phase out goal - *To phase out leaded gasoline by the end of 2008 worldwide to be followed by the global introduction of vehicles with catalytic converters* - with realization that the Sub-Saharan Africa will eliminate leaded petrol by 1 January 2006.

2006:

- All Sub-Saharan African countries phase out leaded petrol.

2010:

- Bosnia-Herzegovina, Montenegro and Serbia phase out leaded petrol.
- Innospec Ltd pleaded guilty to bribing Indonesian government officials employed by Pertamina, a state-owned refinery, and was fined \$12.7 million as part of a global settlement. Innospec officials later were charged with bribing state officials in Indonesia and Iraq to secure contracts for the supply of TEL (<https://www.sfo.gov.uk/cases/innospec-ltd/>).

2011:

- A study supported by UNEP on the *Global Benefits from the Phaseout of Leaded Fuel* by Peter L. Tsai and Thomas H. Hatfield, estimates the phase out of leaded petrol contributes US\$2.4 trillion to the global economy or 4% of global GDP; this monetary saving is the calculated by measuring social benefits such as heightened IQ levels and reduced criminality, as well as health savings from afflictions such as cardiovascular disease. This global effort to end the use of leaded petrol also translates to 1.2 million fewer deaths per year.



2014:

- Leaded gasoline remained legal as of late 2014 in parts of Algeria, Iraq, Yemen, Myanmar, North Korea, and Afghanistan. Working in those countries was difficult for UNEP, given they were at war and/or stockpiled a lot of leaded petrol to be used in their refineries (also due to bribery from the TEL producer).

2015:

- The governments of Algeria and Iraq have scheduled the final elimination of leaded gasoline in their countries, after refinery upgrades.

2016:

- UNEP-sponsored phase-out is nearly complete: only Algeria, Yemen, and Iraq continued widespread use of leaded gasoline.

2021:

Algeria was the last country to finish their stock piles in July of this year.



Sources:

<https://www.oecd.org/env/ehs/risk-management/1937036.pdf>

<https://www.eesi.org/papers/view/fact-sheet-a-brief-history-of-octane>

A.K. Singh, M. Singh, Lead decline in the Indian environment resulting from the petrol-lead phase-out programme, *Sci. Total Environ.*, 368 (2006), pp. 686-694

<https://www.wilsoncenter.org/publication/growing-lead-environment-lead-pollution-and-children-china>

<https://www.bbc.com/news/business-40593353>

<https://www.britannica.com/science/leaded-gasoline>

<https://en.wikipedia.org/wiki/Tetraethyllead>



## **Eulogy for Noela Whitton, by her son Hugh O'Brien**

**At Linden, NSW, 15<sup>th</sup> April 2021**

Mum was born in the small Queensland country town of Murgon, Queensland, just three weeks after the greatest stock market crash in history. She was a poster child of the depression and was into recycling and conservation before Al Gore was even born!

It led to her eldest daughter Jane becoming a sculptor using recycled paper pulp, to her middle daughter Claire becoming a whiz at making meals go further and to her youngest daughter Lizzie becoming a United Nations award winning environmentalist.

Mum grew up in the back of her father's electrical goods shop which sold mainly radios - His Master's Voice HMV was their big brand - and then later TVs.

Grandad and grandma encouraged their five kids – Ivy, Noela, Colleen, Kevin and Bryan – to be involved in music and performance. Mum learned the violin and played and sang at dances.

In 1942 with the Japanese forces threatening Brisbane, the students of St Rita's Clayfield were moved to live at the convent in Murgon, further inland and supposedly safer. With a manpower shortage they needed a responsible person to ride each day to the bakers and take a load of bread to the convent for the boarder's lunches. 12-year-old Noela was the only girl entrusted with this job and she did it, rain, hail or shine.

Later when the Australian army set up camp outside Murgon, all the McMahan girls provided musical entertainment at Saturday afternoon dances.

Mum had a love of Shakespeare and became a speech and drama teacher. She met the love of her life Evan Whitton in Murgon in 1945 when she was 15 and he was 17. Evan told me he first fell in love with Noela when he saw her riding her pushbike down Lamb Street.

One day at the Presentation Convent school in Murgon, one silly lad let the air out of Noela's tyres. She hurled him down an embankment and he ended up sprawled in tree branches. Clearly, no one was ever going to let the air out of Noela's tyres – she was unstoppable for over nine decades!

For various reasons, including letters not passed on, the teenage romance of Evan and Noela was derailed.

Mum used to take the 30-mile steam train ride from Murgon to Kingaroy to teach speech and drama. She would stay overnight in the Broadway Hotel and it was here she met a dashing returned serviceman who had been a radio operator on Lancaster bombers in WW2. Our father Des O'Brien stayed on in Belgium until 1946 as part of the war reconstruction team in Europe.

Mum was attracted to our father because he was very well-spoken, very well-read and very well-mannered but best of all, his ambition was to become a racing car driver based out of Paris.

Paris was the hot button word for 20-year-old Noela. She'd been a serious Francophile ever since the late 30s when she listened to Edith Piaf 78s on the HMV model 102, according to my grandfather, the world's finest portable gramophone.

Noela married Hugh Desmond O'Brien in Murgon in May 1951. By June 1956, she had four kids under four and a husband who drank away his undiagnosed PTSD most nights at the Kingaroy RSL.

Mum gave us all a fantastic start with home kindergarten before each of us began school at St Mary's Kingaroy. She encouraged all of us to enter Eisteddfods and she arranged for me to act in a radio play

when I was eight.

She acted and directed plays for the Kingaroy Theatre Company with her biggest role being Pearl in a 1962 production of the famous Australian play *Summer of the Seventeenth Doll*.

December 1<sup>st</sup> 1962 was a pivotal day in our family's history. After the wedding in Brisbane of Mum's brother Bryan to Veronica Murphy, Noela dropped in with us four kids to say hello to Evan's mother and father, who had moved from Murgon to Brisbane some years earlier.

By chance, Evan, who was living in Toowoomba at the time, happened to be there. Mum said a few years ago in the *Sydney Morning Herald* piece *THE TWO OF US* that it was as if she had only seen him yesterday.

Their love was rekindled and plans were made. In 1964 she left our father and she took me to live with Bryan and Veronica in Melbourne. Jane, Claire and Lizzie spent six tough months in the Presentation Convent in Murgon before we were all reunited in January 1965.

We lived in a tiny two-bedroom flat in East Melbourne. Mum literally slept on the couch and worked three jobs at once. She worked weekdays at Dine Out Melbourne, nights at the TAB and weekends selling furniture for a company in Bridge Road Richmond called Myer Teale.



*Noela Whitton with Hugh, Claire, Lizzie and Jane, June 1965, East Melbourne.*

When Evan came to live with us in 1966, Mum did not ease up but if anything worked even harder. She sold advertising for *Fashion News* - her boss described her as their greatest ever salesperson, she sold creative services for Central Art Studios and United Graphics and insurance for AMP.

Her vibrant personality, her courage and her incredible work ethic meant our circumstances slowly improved. We moved to Sydney in 1971 and as Evan rose up the ranks of journalism the financial pressure eased a little but Mum continued to work hard.

She was a typesetter at the University of Sydney and became so good at it she later taught the subject

at Sydney College of the Arts. She could typeset in 16 languages but so she could be faster, she actually studied Arabic, not an easy language to master when you are entering your fifties.

Mum's love of performing never went away. In 1979 she became a proud member of Actors and Announcers Equity and in 1982 she appeared as a featured extra in the Noni Hazlehurst film *Monkey Grip*.

As I mentioned earlier Mum's hot button word was Paris. She always wanted to live there so she convinced Evan - who thought crossing over the Sydney Harbour Bridge to go to the North Shore was a journey too far - to actually move to Europe as the *Sydney Morning Herald's* foreign correspondent. They lived in Notting Hill in London but most importantly, for three glorious months in Paris. It was in Paris in September 1984 that Noela finally married Evan. Their best man was former Australian Prime Minister Gough Whitlam.



*Noela Whitton married Evan in Paris in September 1984 with former Australian Prime Minister Gough Whitlam as best man.*

In France, mum met a fascinating elderly lady named Lily Carre who had been a member of the French resistance fighting the Nazis. Mum wrote Lily's story as a film treatment and my sister Claire, who was by that time was working as a post-production supervisor in Hollywood, put the film treatment in the hands of Roman Polanski.

Around this time, Mum had one of her travel articles published in the *New York Times*, something Evan was very proud of. She wrote extensively for the *Sydney Morning Herald* and at one stage had a regular column on media matters.



From about 1987, when Evan and Noela lived in Brisbane so Evan could cover the Fitzgerald Inquiry into police and political corruption in Queensland, Noela took on possibly the hardest job of her life. She totally supported and championed Evan's goal of changing the legal system from an adversarial approach to a fairer inquisitorial system. She became adept at book publishing and dealing with TV and film producers.

That amazing girl on the bread bike in Murgon sure went places and I was privileged to be along for some of the ride. Thank you Mum for your love.

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## **Eulogy for my mother Noela Mary Whitton 19/12/1929 – 9/4/2021, by Elizabeth O'Brien**



Our mother was the best mother in the universe. From the moment we each came into the world, we have been nurtured and supported by mumsy to develop into being the best possible versions of ourselves. She considered us the greatest achievements of her life – her artworks: Jane a fabulous artist and cook who has created this beautiful home and our lunch, Hugh an award-winning playwright and script-writer to premiers, Claire an artist and a post-production supervisor in Hollywood, and me, a scientist who advocates for a safer and healthier world.

Noela believed that to raise children was to MAKE friends with your children: show them the warmth, compassion, interest, loyalty, good will, kindness and generosity that you'd show a friend. In Noela's written words from her book "How to Stay Friends with Your Children" [free to read or download at <http://netk.net.au/Whitton/NoelaWhitton.pdf> ]:

- "Why can't a parent be more like a friend?"
- "Plan your masterpiece [your child]"
- "To air and water, add poetry and laughter"

Noela discovered the teachings of Maria Montessori years after she had developed her own home-preschool – which started punctually at 9:22am (yes, that's where Hughy gets it from!) replete with special materials used only for this purpose. The materials were "unpacked before starting and put away when we finished" and "during every waking moment of the children's lives, supplying, where appropriate, an explanation of everything they touched, smelt, tasted, heard or saw."

My earliest memories of my mother are of this wonderful preschool she created in our home in Kingaroy, where I developed my love of patterns and my love of teaching. I remember she taught us and a friend's children to read, write, add and subtract before we started school, but more than that, she taught us to love music, art, literature. When I was four and my siblings were at school, Noela



always had ABC radio on and I learned to whistle both jazz and classical music and can still whistle along to the entire 4<sup>th</sup> movement of Beethoven's 9<sup>th</sup> symphony. This led to my love of music and singing, which of course Noela came to watch each and every time I performed.

Noela's garden in Kingaroy inspired my lifelong love of plants. I remember the beautiful smell of the tomatoes she grew outside the kitchen window, the incredible green environment we had surrounded by a fruit orchard. We built cubby houses in the grape trellises and swung on the huge swing near the fig tree. From the obelia hedge she planted out the front, the pussy willow, her favourite pansies and shade from the weeping willow tree, I came to know the wonder of nature.

In later years I was always tending to my mother's balcony garden and my own gardens and farm. My last gift to Noela was baked home-grown pumpkin from our farm and my mother's continuous gift to me was being enthusiastic about looking at the hundreds of plant photos I take each year!

Evan Whitton became my stepfather when I was nine but he was universally known amongst my friends and colleagues as my "father" for the last 50 years of his life. When my three boys were all teenagers I began a tradition of visiting my parents every Saturday – like a friend would do – to enjoy their company, help around the apartment and feast on Evan's restaurant-grade cooking. These exchanges were always for me, an honour and a privilege – and they only increased in frequency in more recent years.

I feel I am the luckiest child on earth to have had a mother who was so determined and mentally strong. My mother miraculously survived massive stomach surgery when I was two, and had a world record number of gallstones removed in her fifties. She showed incredible neuroplasticity by returning – through her strength of will alone – to her exceptional emotional intelligence and brain functioning after each stroke.

When Evan lay dying in hospital in July 2018 and I was taking Noela home from a 12-hour shift bedside, she said to him "God Bless" and he asked her: "are we doing that now?" to which she replied "yes we are." Since then mumsy and I have often said "God Bless" to each other and I feel blessed by the absolute joy of spending countless hours with my mother, especially in her last six years, the Beautiful Evening of her life, her Beau Soir.

Throughout my life, "Noelakins" as Evan called her, helped me to flower into motherhood and grandmotherhood myself. I hope that my three sons, Alex, Eric and Harry, and grandchildren Riley, Phoenix and the little one on the way, will regard me as their friend in the same way as Noela became my best friend. Noela was a beacon in my life: always accepting me for who I am, always looking out for me, being interested in my interests, participating in my life and being a fabulous role model in relationships, as a parent and as a friend.



To you, my best friend, my mother, loved by Evan for 75 years, now with him again, I sing:  
*Darling don't be afraid I have loved you  
For a thousand years  
I'll love you for a thousand more*



Farewell to our beautiful mother of seven, grandmother of seven and soon-to-be great-grandmother of seven.

Noela celebrating her 90<sup>th</sup> birthday with family.

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