

Making leaded petrol history together

Contents

Editorial.....	1
Turning the tide at Nairobi.....	2
One company stands in the way of the world's first global phase-out	3
Letters between Partners of the PCFV.....	6
Chronology of Leaded Gasoline / Leaded Petrol History -	9
Sign-on Letter to Innospec CEO.....	27
Timeline of leaded aviation fuel	40
Free Subscription to e-Newsletter Notifications / Membership & Donation Forms	41
Acknowledgement and Disclaimer	41

Editorial

With just a few days of December 2011 remaining, at the time of writing, it is a faint hope that The LEAD Group's main 'wish list' item for 2011 will be achieved, namely, the total global phase-out of leaded petrol by the end of the year. On Friday 23rd December 2011, the final version of a sign-on letter will be sent to the CEO of Innospec, Patrick Williams, including:

"Your announcement of the date of the cessation of sale of TEL for MOGAS would make an historic precedent in responsible multinational enterprise achievement and a gift of health for the world, this Christmas."

And then it's up to Innospec: history may be made and Patrick Williams of Innospec may earn the award of Champion of the Lead Safe World, proposed by Elizabeth O'Brien, President of The LEAD Group.

Was it foolish and misguided to put forward the proposal that Innospec, the one remaining maker of tetra ethyl lead (TEL) for motor fuels (MOGAS) should simply stop supplying it, and ask, in June 2011 that the six people who could have acted to do something achieve this, do so? (See LEAD Action News, vol 11 no4 and see the Fact Sheet below.)

Yes, and no.

Yes, in believing that it would actually happen, and allowing 'failure' to have at least some effect on morale.

No, in that vested interests will never, of their own accord (almost never – philanthropists excepted) propose to end anything that benefits them. Laws have to be passed by governments, the 'public' has to show revulsion, or an equally or more profitable but less damaging (environmentally, socially, etc.) way has to be forced on them, or discovered for themselves. Or all of the above.

Change for the better, where vested interests are at work, can take a long time.

In 'western' countries our freedoms and 'rights' have taken many centuries to achieve (see A.C.Grayling 'Towards the Light,' Bloomsbury, 2007), and those freedoms and rights are under constant threat.

Bill Moyer, of the Social Movement Empowerment Project, wrote, in July 1990, "The Practical Strategist: Movement Action Plan (MAP) for Evaluating, Planning and Conducting Social Movements." Moyer stresses gaining public support as essential.

The UN has apparently accepted that two more years' of leaded petrol is – well, acceptable. Innospec wants to continue to sell TEL for MOGAS as long as it's not banned in every country, and Innospec can still maximise cash flow.

Does two more years' of leaded petrol represent failure of a campaign? Hardly, but it doesn't represent total success, either. Public support is needed, if those two years are to be reduced.

See all the public support we've achieved to date in: 'Sign-on Letter to end Leaded Petrol', to be sent to Innospec today, Friday 23rd December 2011, in this issue of *LEAD Action News* and look out for the next installment come January 2012.

Turning the tide at Nairobi

Report on the 9th General Partnership Meeting (GPM) of the Partnership for Cleaner Fuels and Vehicles (PCFV) of the United Nations Environment Programme (UNEP), October 26-27th 2011, Nairobi Kenya.

By Zac Gethin-Damon, Campaigner for the End of Leaded Petrol by the End of 2011, The LEAD Group Inc. 23rd December 2011

The way in which the meeting was introduced with a 'Welcome by UNEP' from the Deputy Executive Director of UNEP, Amina Mohamed, summarised the general tenor of the entire meeting towards leaded petrol: that the PCFV had already achieved a global phase-out of leaded petrol and therefore that focus was to be placed on sulfur in fuels and on cleaner vehicles.

Rob de Jong's Clearing House presentation continued with the same theme. The lead petrol campaign was outlined with the PCFV's activity in each of the 6 countries outlined. The only country with an 'official' phase-out date was Algeria with 2013, and Algeria also had a 'maybe' phase-out date of 2012. It was said that Innospec planned to phase out the lead in 2012 anyway so leaded petrol would be phased out after 2012, as stocks of Tetra Ethyl Lead (TEL) and stocks of blended leaded gasoline were used up in the six remaining countries that were possibly still selling leaded gasoline. The lead petrol campaign represented a success, so, it was said, why waste our time and money on leaded petrol, knowing that phase-out's are exponentially difficult, in the last 6 countries?

My presentation on a new tack, stopping supply at the beginning of the supply chain, sadly fell on deaf ears, or ears that had been told that the lead campaign was already a *fait accompli*.

What I did take from this meeting was the inspiration that if the PCFV was disinterested in completely phasing out leaded petrol in 2011 - then clearly it had to be done via another forum.

Thus, upon my return to Australia, we set about writing all the articles in this newsletter and envisaging a MUCH earlier date than 2013 or beyond. We hope that Rob de Jong's signature on our recent sign-on letter to Innospec, and the signatures of other PCFV Partners, and the Letters between Partners below, shows that our action in Nairobi has turned the tide and that the PCFV is

willing to support The LEAD Group's call: a prompt and total phase-out of leaded petrol by stopping the production and supply of TEL for MOGAS, by Innospec.

To see my presentation:

[http://www.lead.org.au/bbtp/TLG%20Presentation%20at%20Nairobi%2020111026-27/Gethin-Damon Nairobi Presentation 20111026-27 files/frame.htm](http://www.lead.org.au/bbtp/TLG%20Presentation%20at%20Nairobi%2020111026-27/Gethin-Damon%20Nairobi%20Presentation%2020111026-27%20files/frame.htm)

or at PCFV website:

<http://www.unep.org/transport/PCFV/meetings/9GPM.asp>

Fact sheet: Let's Make Leaded Petrol History One company stands in the way of the world's first global phase-out

By Elizabeth O'Brien, edited by Anne Roberts and Zac Gethin-Damon, The LEAD Group Inc. Australia.

NB: the facts in this fact sheet are fully referenced in [Chronology of Leaded Gasoline / Leaded Petrol History](#) - Knowledge of the dangers of lead in petrol / gasoline; Steps taken and not taken, to phase out leaded petrol; Steps remaining to achieve global leaded petrol phase-out, The LEAD Group Inc, 13 December 2011.

There is no safe level of lead in blood except zero. No one on the planet and no organism has ever been found to have a blood lead level of zero. We ALL have some lead in us. How much is in your blood, in your bones? Will your bone stores soon leach in to your blood and give you some the symptoms that we think of as "ageing"? What's your blood pressure like? Did you know that two of the most common ways to die are by heart attack or stroke, and that lead exposure (earlier in life) increases the risk of both? The major source of the global epidemic of lead poisoning which began 90 years ago in December 1921 is lead in petrol. Since 1993, only one company, Innospec, has continued to make the lead additive for gasoline, tetra-ethyl lead (TEL) maintaining its global monopoly over this significant contributor to negative impacts on the health, learning ability, crime rates and risk of early death of all of us, right up to today.

Environmental Health NGOs like The LEAD Group regularly call for a ban on this toxic substance or that toxic consumer product or elimination of hazardous work processes, but our efforts in working with the World Health Organisation and the United Nations etc are wasted if we don't receive early cooperation (voluntary or forced) from the makers of these toxic problems, in order to actually achieve the phase-outs that we celebrate when target dates are first decided. The LEAD Group is not aware of ANY toxic THING that has successfully been completely phased out globally. Join us in the effort to complete the phase-out of lead in petrol, thus setting a global precedent and an inspiration for all future toxics campaigns.

The UN target date for global phase-out for leaded petrol was 2008, and has just been spun out to 2013

In April 1994, the United Nations called for government action to eliminate lead from gasoline globally. In retrospect, they could simply have ordered Innospec to stop making TEL for petrol and start making non-lead additives. Original phase-out targets were set at **2008** (by the United Nations in 2002), then **2010** (set in 2006 by SAICM (Strategic Approach to International Chemicals Management)). Who among us can accept that the profits of one company outweigh the health of millions of people and the biosphere itself?

Now the UN has accepted **2013** as the date for phase-out, apparently based on Innospec's 2008 statement: "We intend to manage the decrease in the sales of TEL for use in automotive gasoline to maximize the cash flow through the decline" and the company's 2009 announcement: "We expect that we will cease all sales of TEL for use in automotive gasoline in 2012."

The global phase-out of leaded petrol will occur when:

- **Innospec ceases to supply TEL for petrol, and**
- **buys back unblended stocks of TEL from refineries;**

and when:

- **all blended leaded petrol stocks are used up.**

What has been done to date, to achieve the global phase-out?

After the wealthiest countries had completed their phase-outs, the World Bank assisted many Asian countries and the United Nations has assisted some 80 national governments with their phase-outs. The slowdown in the pace of national phase-outs is a testament to Innospec's business planning "to maximize the cash flow through the decline" (Feb 2008). In an 18 month period prior to Innospec's Feb 2008 Annual Report 40 countries stopped selling leaded petrol. However, following Innospec's 2008 Report to the US Government, progress stopped: in a period of 38 months only another 11 countries stopped selling leaded petrol. As of June 2011 there were a final six countries still making leaded petrol at their refineries and only one of them has an official phase-out date planned – and that date is 2013.

On 20 May 2008, The LEAD Group thus determined it was time to change tack - to cut off the supply of TEL (or the lead in the TEL) for MOGAS, rather than wait for the final national governments to achieve phase-out.

Any one of the following six people has the power to achieve the global phase-out sooner than 2013:

Ivan Glasenberg, CEO of Xstrata, which supplies the lead that Innospec makes in to TEL for MOGAS; **David Cameron**, Prime Minister of the UK where Innospec makes the TEL; **Julia Gillard**, Prime Minister of Australia, who could declare a moratorium on lead exports destined for the UK and being made into lead petrol additive by Innospec.; US President **Barack Obama**, by demanding an end to the sale of lead additive for petrol by US-incorporated Innospec; Swiss President **Micheline Calmy-Rey** by controlling either of two Swiss companies: Xstrata which mines the lead and owns the smelting company that refines the lead that is later manufactured into the lead additive for leaded petrol; and Alcor (a subsidiary of Innospec) which assists Innospec in TEL marketing / distribution. But most of all, one man, **Patrick Williams**, Innospec's CEO, has the power to re-write the TEL supply policy of Innospec's Stewardship programme to stop TEL ending up in MOGAS.

Research since 2002 (when the 2008 phase-out date was set) on the dangers of lead:

Even low levels of lead in the blood, [mainly due to the use of leaded gasoline] raise blood pressure and are predicted to cause early death in as many as 30 million US adults.

The LEAD Group has web-published [*Dangers of a blood lead level above 2 µg/dL and below 10 µg/dL to adults*](#) and [*Dangers of a blood lead level above 2 µg/dL and below 10 µg/dL to children*](#), which summarise some three dozen new findings of the serious impacts of lead at blood lead levels below what the US Centers for Disease Control currently uses as an intervention level.

In April 2011, the estimated global annual impacts of the global use of lead in vehicle fuels were found [by [Hatfield and Tsai in a United Nations-commissioned report](#)] to be significant:

Close to **1.1 million deaths**;

A loss of **322 million** IQ points;

Close to **60 million crime** cases;

Economic loss of **USD 2.4 trillion** per year (**4% of global GDP**). [[A later peer-reviewed Tsai and Hatfield publication](#) found **4.27% of global GDP** to be a closer estimate.]

Consequences of further delay until 2013:

Nearly 200 million people in six countries (Afghanistan, Algeria, Burma, Iraq, North Korea and Yemen) will be exposed to lead from leaded petrol for another two years (or more) unless something is done outside their countries.

What government agencies can do to speed up the phase-out:

SAICM delegates and government Partners of the United Nations' Partnership for Cleaner Fuels and Vehicles (PCFV) can support The LEAD Group's requests to the six people mentioned above in their own communications and actions on this issue. It is especially important for SAICM delegates to take action, considering that SAICM's plan is for sustainable international chemicals management to be achieved globally by 2020, and if this first global phase-out date for leaded gasoline can be achieved this year, only one year (not two or three) after the original phase-out target date, then other SAICM target dates will gain the motivating factor that SAICM intended by setting target dates in the first place. The global phase-out of leaded petrol will rightly be applauded as the first great achievement of SAICM and specifically of the PCFV.

What toxics NGOs can do to speed up the phase-out:

Contact your national SAICM delegates and government and other Partners of the PCFV and especially contact the six people, to let them know you demand this phase-out. To date, the UK PM has been unresponsive to our request that he ban the export of TEL for MOGAS and Xstrata CEO's has been unresponsive to our request for their cooperation at the start of the supply chain of the lead in leaded petrol. But on 15 December 2011, the OECD National Contact Point who received our complaint about Innospec not abiding by the OECD's Guidelines for Multinational Enterprises, rang to say that Innospec has decided not to participate in the mediation process available to companies and NGOs through the OECD. So we decided to write our sign-on letter to Innospec, and we thank all those organizations and individuals who signed on in time for it to be sent to Innospec on Friday 23rd December 2011.

What else can you do? Ask journalists to look in to the issue.

Let's prove that together, we have the power to put **people before profits**.

Letters between Partners of the PCFV

From: MOON10

Sent: Sunday, December 18, 2011 9:02 AM

To: The LEAD Group

Cc: UNEP

Subject: RE: Please simply reply to this email to help end the 90 year error of leaded petrol/gasoline

Elizabeth,

There is no valid reason to continue manufacture, distribution, storage / supply and sale of leaded gasoline for any fleet of existing cars or light-duty vehicles or handheld engines anywhere in the world. Simply switching to unleaded gasoline is the proven quick and cost effective measure to remove airborne inhalable lead from human breathing space. The UNEP Report by the Valve Seat Recession Working Group under the Partnership for Clean Fuels and Vehicles - titled "Eliminating Lead from Gasoline: Report on Valve Seat Recession" was effective in Africa and elsewhere in world countries. Countries just "switched". There were no reported problems in any country (check again with Rob De Jong UNEP) when they switched to unleaded fuels and in all subsequent years. Lead poisoned air was halted abruptly. Children born after the switch returned to normal mental and IQ development levels (JJM Note: Important - this should be documented by some credible study)

One thing disturbs me - proponents of switching to unleaded gasoline and halting leaded gasoline do not say "switch" or "ban" or any word describing this process we advocate. Instead the term "phase out" is used conveying an incorrect idea of what we actually mean! The 51 African nations switched to unleaded!! without problems!! Elizabeth, Michael, Jim and the UNEP members all have to remove "phase-out" from their descriptions. "Phase out" was used early on and was a very long and costly process - two tanks, two distribution system, with expensive refinery process complications and was unnecessary. "Switch" is easy and invisible - all that is needed is replacing octane - that's up to the refinery with many options. All the country had to do is just change its gasoline order to an unleaded gasoline specification (see reference: Worldwide Fuel Charter 2006) then the next ship in will be unleaded gasoline and will free from metals, Fe, Mn Pb and other - no intentional additions.

Best regards,

John J. Mooney

President: John J Mooney LLC

President: Environment & Energy Technology & Policy Institute

85 Colgate Ave.

Wyckoff, NJ 07481, USA

From: Rob de Jong

Sent: Tuesday, December 20, 2011 12:47 AM

To: John Mooney

Cc: The LEAD Group

Subject: Re: Please simply reply to this email to help end the 90 year error of leaded petrol/gasoline

Dear John,

You are right, actually we have stopped using "phase out" and start using "eliminate" for some time now (although once in a while we still use "phase out" accidentally - as in the overview below....)

We are intensively working with each of the 6 remaining countries, as we presented in the global meeting last October (below).

We think that Afghanistan, North Korea, Myanmar may actually already be (almost) completely unleaded. The major problems are Yemen, Iraq and Algeria. Jane just came from Algeria and they now want to bring their phase out date forward, she is consulting with them. We are doing an MOU with Iraq, that are partially (one-quarter) unleaded. Yemen we are supposed to meet the senior leadership, we were invited, but with ongoing unrest cant do much.

Best,

Rob

Country	Activities	Phase-Out Date
Afghanistan	<ul style="list-style-type: none">Dialogue with Ministry of EnvironmentBlood lead testingC-H meeting with Afghan official at UNEP HQ	Unknown Already largely (completely?) unleaded
Algeria	<ul style="list-style-type: none">Ministerial commitment to phase-outParticipated at several PCFV workshops (Cairo 2006 and 2010, Tunis 2008 and 2009, Rabat 2010)Signed SSFA to carry out lead phase-out activities in Nov 2011 – workshop 16/17 Nov	2013 official maybe 2012
Iraq	<ul style="list-style-type: none">Discussions with US State DeptNational workshop in Cairo, Apr 2011Follow-up national activities planned. SSFA being finalized	Unknown
Myanmar	<ul style="list-style-type: none">Discussions held with National Commission for Environmental AffairsC-H and UNEP regional office held Discussion Forum in Myanmar in Jun 2010C-H to support the Myanmar government develop a national road map for cleaner fuels and vehicles	Unknown Very little leaded?
North Korea	<ul style="list-style-type: none">C-H and UNEP regional office held a training workshop in Jan 2011 in PyongyangThe PCFV to assist with developing new legislation	Unknown Imports from China Most likely unleaded?
Yemen	<ul style="list-style-type: none">Several national activities supported - Blood lead testing, workshop, public awareness campaignSupported to participate in PCFV workshops (Beirut 2004, Cairo 2006 and 2010, Bahrain 2008, Tunis 2008 and 2009,Meeting with Prime Minister and Refinery Technical Expert planned	Unknown

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From: John Mooney

Sent: Tuesday, December 20, 2011 3:57 AM

To: Rob de Jong; Michael Walsh

Cc: The LEAD Group; James Rochow

Subject: RE: Please simply reply to this email to help end the 90 year error of leaded petrol/gasoline

Rob,

Thanks. "Eliminate" is better but is not as good as "ban". The wording of the Worldwide Fuel Charter 2006 - including "no intentional adding of any metal to gasoline" is the best. That should be an official UNEP and PCFV objective.

Even though only a few "leaded" countries remain I suggest the offending UNEP literature you cited in your below message be retracted, revised (with 'ban' or 'eliminate') and re-issued. This gives us the chance to explain that reason for this change was misinterpretation of the term "phase-out" in today's world. In reality a complete immediate end to leaded gasoline (and other such metals) is today's UNEP objective. It is the most expedient and cost effective measure that a country can take to assure clean fuels are used.

This lead elimination approach by simply switching has been taken by most world countries in the last 10 years. Earlier China and India also just switched to unleaded. Today almost the entire world population has benefited from this collective action.

The bottom line for UNEP is that public health of those few countries remaining with leaded gasoline is a vital concern. UNEP cannot sit idle without reminding these countries of this huge accomplishment with this easy proven method - "just switch" to ordering unleaded gasoline for the next delivery. The new clean fuel will quickly dilute the old remaining leaded gasoline storage tanks and within several delivery refill events will have purged the entire system. It is not complicated, is safe, and has been proven by most other world countries who are now free from leaded gasoline and free of airborne lead in human breathing space from this major airborne lead source.

Best regards,

John J. Mooney

Chronology of Leaded Gasoline / Leaded Petrol History –

Knowledge of the dangers of lead in petrol / gasoline;

Steps taken and not taken, to phase out leaded petrol;

Steps remaining to achieve global leaded petrol phase-out.

By Elizabeth O'Brien, Manager, Global Lead Advice & Support Service (GLASS) run by The LEAD Group Inc. Australia. Partner, UNEP Partnership for Cleaner Fuels and Vehicles (PCFV) and Zac Gethin-Damon, LEAD Group Campaigner for the End of Leaded Petrol Globally by the End of 2011, edited by Anne Roberts for The LEAD Group Inc.

- 1921 Dec – tetra-ethyl lead (TEL or “ethyl”) was tested for its anti-knock properties for the first time in gasoline, at the GM labs in Dayton Ohio by Thomas Midgley (Kovarik 2011) who was posthumously declared to be “responsible for more damage to Earth's atmosphere than any other single organism that has ever lived.” (Walker 2007)
- 1923 Feb - the first commercial sales of leaded gasoline took place in Dayton, Ohio. (Kovarik 2011)
- 1923 June - the US public health service made aware of the leaded gasoline and started asking for safety tests. (Kovarik 2011)
- 1923 Sept - workers started dying in the DuPont TEL works... “sickening deaths and illnesses of hundreds of TEL workers... Gripped by violent bursts of insanity, the afflicted would imagine they were being persecuted by butterflies and other winged insects before expiring, their bodies having turned black and blue.” (Kitman 2000a)
- 1925 Apr - Yale university public health scientist claims Ethyl gasoline represents "the greatest single question [whether leaded gasoline is safe] in the field of public health which has ever faced the American public." (Kovarik 2011)
- 1925 May 20 - US Public Health Service holds conference (PHS US 1925) to discuss viewpoints on Ethyl controversy and appoints blue-ribbon committee to conduct independent inquiry. Consideration of alternatives to lead as anti-knock is suspended as conference is cut back from two to three days to only one day. (Kovarik 2011)
- 1926 Jan 26 - PHS committee finds "no good grounds" for prohibiting Ethyl gasoline but insists on continued tests. No independent tests conducted until 1960s. List of alternatives to tetraethyl lead proposed by C.E.A. Winslow of Yale kept from final report. (Kovarik 2011)
- 1928 - New York City ends its ban on leaded gasoline. (Kovarik 2011)
- 1953 - First post-war concerns about lead as air pollutant surface in Los Angeles. General Motors follow issues closely (Kovarik 2011) [preparing to argue case for continuing to produce TEL]
- 1954 - A young academic at King's College London, (later Professor) Derek Bryce-Smith first concerned (about the health effects of leaded petrol) when he asked the manufacturers for a sample of the kind of lead added to fuel for use in an experiment. “I got a phone call to say they did not want to make it available because it was extremely toxic,” he later recalled. “They finally gave me some, but told me that if I spilt any on the floor, I would have to take the whole floor up. And if I got any on my finger, it would be absorbed through my skin and drive me mad or kill me.” (Lean 2011)
- 1960 - Tetramethyllead introduced as an additive to automotive fuel.

1960-1975 – A 2010 study stated that “the PbB [mean blood-lead level] during the peak years of maximum leaded gasoline usage (1960–1975) could be estimated at about 48 µg/dL [micrograms per decilitre]” and possibly as high as 63 and: “The extrapolated peak level of 48 µg/dL (range 40 to 63) is associated with clinical and behavioral impairments, which may have implications for adults who were children during the peak gasoline lead exposure leaded gasoline emission was the predominant source of lead exposure of African-American Cleveland children during the latter two-thirds of the 20th century.” (Robbins et al 2010)

1965 Sept – Clair Patterson publishes "Contaminated and Natural Lead Environments of Man," the first research to show that high lead levels in industrial nations are man-made and endemic. (Arch Environ Health. 1965 Sep; 11:344-60) (Kovarik 2011), thus beginning his campaign to phase-out leaded gasoline and lead solder in food cans.

1966 – US Congressional hearings on air pollution lead to long debate about new agencies and new regulations. (Kovarik 2011)

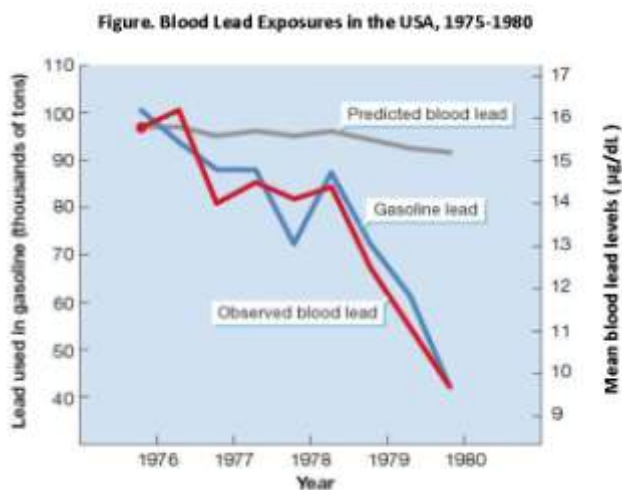
1969 - WHO Expert Committee reports on ambient air lead concentrations; non-urban sites show less than 0.5 µg/m³ [micrograms per cubic metre], while urban sites have values ranging from 1 to 5-10 µg/m³. Highest levels recorded on highways during rush hours, 14-25 µg/m³. (IPCS 1977)

1970's - a legal basis for the precautionary principle is established by a court decision called the Ethyl decision involving banning leaded gasoline. (Charnley 2000)

In the 1970s, research showed that low environmental levels of lead exposure could cause permanent learning and behavior problems in children exposed before birth and in infancy and toddlerhood. Lead paints and leaded gasoline were the major sources of exposure. Efforts to reduce lead exposure began in 1975-76 when lead paints were banned and leaded gasoline was phased out.

Exposure models predicted that lead levels in the population would change very little, but biomonitoring at the CDC found the opposite: as lead levels in gasoline declined, so did

blood lead in the US population. Today, the average US citizen has a blood lead level under 2µg/dL. The level that triggers public health action to prevent further exposure is 5µg/dL, and the average 1976 blood lead level is now considered lead poisoning.



1970 – US Environmental Protection Agency created. Car manufacturers ordered to begin building engines to run on unleaded gasoline by 1975. Ethyl Corp. unsuccessfully opposes phase-out of leaded gasoline in courts.

1970 – US auto makers develop catalytic converter as a stop-gap technology while they develop cleaner engines. TEL poisoned the catalytic converters so the pressure was on to get lead-free gasoline (petrol) on the market to permit catalytic converters. In response to this the US Environmental Protection Agency (EPA) orders introduction of unleaded gasoline and issues an order for lead-gasoline-free cars by 1975, thus beginning the world's first national phase-out of leaded petrol. A health model predicted that the effect of the introduction of

unleaded gasoline on lead concentrations in the blood of US residents would be minor. Ref and graph (adapted from US CDC) (Sexton et al 2004)

- 1971 July – Japan introduces a maximum permissible level of 0.31 grams of lead per litre (IPCS 1977) which may have been the first such restriction and thus the first national lead-in-petrol phase-down policy.
- 1972 Apr – Unleaded petrol begins to be marketed in Japan. (IPCS 1977)
- 1975 - New US car models made with catalytic converters which require unleaded gasoline. Ethyl Corp. unsuccessfully proposes "lead tolerant" catalytic converters. (Kovarik 2011)
- 1976 Mar – US Court of Appeals ratifies maximum permissible level of 0.13 g of lead per litre of gasoline by 1 January 1979. (IPCS 1977)
- 1977-82 - Extensive tests by public health scientists show marked correlations between high levels of lead in children's blood and brain damage, hypertension and learning disorders.
- 1981 – The US EPA notes that between 1970 and 1979 a 41% drop in the composite maximum quarterly average of ambient air-lead concentrations at 105 sites across the nation was accompanied by a 40% drop in the amount of lead consumption in gasoline, excluding sales to the military. (Pirkle Et al 1983)
- 1983 June - The Second National Health and Nutrition Examination Survey (NHANES II) reveals a precipitous decline in blood lead levels in all segments of the US population, a drop of 37% (from 14.6 to 9.2, a drop of 5.4 micrograms per deciliter) between Feb 1976 and Feb 1980, closely paralleling the contemporaneous decline in the amount of lead added to gasoline. [See graph above.] (Pirkle et al 1983)
- 1984 - City of Chicago first to order end of all leaded gasoline sales since New York City ended ban on leaded gasoline in 1928. (Kovarik 2011)
- 1985 – US EPA's estimates based on Pirkle et al (1983) indicate that lead in gasoline in the United States may be responsible for well over one million cases of hypertension per year and for over 5,000 deaths from heart attacks, strokes, and other diseases related to blood pressure. Moreover, these estimates cover only males aged 40 to 59 and, in the case of heart attacks, strokes, and deaths, only white males in that age group. In their estimation of the total benefits of a phase down of gasoline some other impacts were also addressed, for example Children's Health Effects. US EPA's estimation of the total benefit of a phase down of leaded petrol was: "7.9 billion, while the estimated cost is only \$607 million, resulting in net benefits of \$7.3 billion". (Schwartz et al 1985)
- 1986 – Japan (probably due to its Minamata mercury tragedy and high value placed on IQ and longevity, or perhaps due to pressure from its auto-makers to be able to include catalytic converters on all new vehicles) became the first nation to fully phase-out leaded petrol.
- 1990 - World Health Statistics Quarterly declares lead in petrol to be "*The Mistake of the 20th Century.*" (Shy, 1990) Consumption of lead in OECD countries for gasoline additives drops from 10% of 3,050,000 tonnes of lead used in 1970 to 2% of 3,365,000 tonnes in 1990 (IPCS 1995) (see pie charts below).

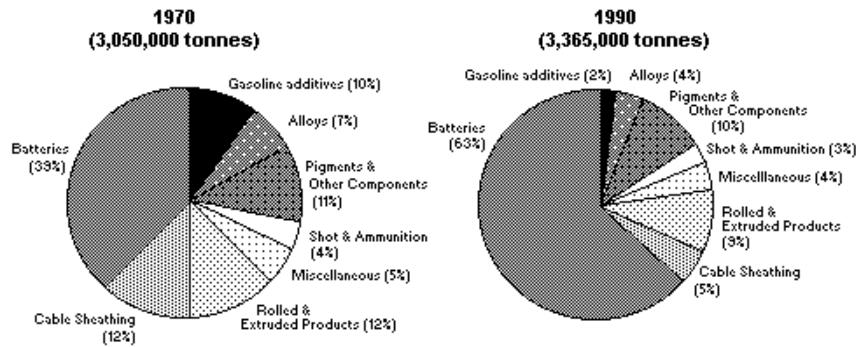


Fig. 1. Utilization of lead in OECD countries in 1970 and 1990 (From: OECD, 1993)

- 1991 - the Organisation for Economic Cooperation and Development (OECD) determines that phasing out leaded gasoline was the most important lead poisoning prevention action any national government could take. (OECD 1991)
- 1991 – US Centers for Disease Control (CDC) redefines childhood lead poisoning by declaring that a blood lead level below 10 µg/dL (micrograms per decilitre) does not constitute lead poisoning. (CDC 1991)
- 1992 – In the seminal book *Human Lead Exposure*, edited by Herbert Needleman, JS Lin-Fu states that some consider the addition of lead to gasoline is one of the greatest public health disasters of the 20th century. (Gilbert and Weiss 2006) Australian NGO The LEAD Group lobbies Australian Environment Minister Ros Kelly to speed up Australia’s phase-out (begun in 1985 and finally achieved in 2002)
- 1993 - Ethyl Corporation ends manufacture of lead anti-knock compounds with the closure of its Canadian plant; instead markets additives purchased from the Associated Ocel Company Limited (later renamed “Innospec”), the world’s only remaining producer of tetraethyl lead (TEL). (Albermarle 2011)
- 1994 – Study shows that US blood-lead levels declined by 78 percent from 1978 to 1991 (Kitman 2000b). US researchers declare: “lead poisoning remains the single most significant preventable disease associated with an environmental and occupational toxin”; and “Although lead in gasoline represents only 2.2 percent of total global lead use, leaded gasoline is by far the single most significant source of lead exposure in urban areas”. UN Commission on Sustainable Development calls on all governments to eliminate lead from gasoline. (World Resources Staff 1998)
- 1994 Feb 1 – Major emergency toxic leak occurs at Associated Ocel (later renamed “Innospec”) TEL plant in Ellesmere Port, UK, resulting in: the company later pleading guilty to the charges that it failed to ensure the health and safety of workers and other persons; paying a fine of £290,000; and installing a new ethyl chloride plant. (Ryder 1996)
- 1994 Apr - “the UN Commission on Sustainable Development called upon governments to eliminate lead from gasoline worldwide. This action set in motion decisions and efforts in other international fora and institutions - including the Summit of the Americas, World Bank, Habitat II, OECD, and the UNECE - to encourage and assist nations to take action to phase out this principal source of lead pollution, which continues to harm the health of millions of people.” (Walsh 1999)
- 1995 Dec – US phases out leaded gasoline for road-use vehicles and US EPA issues press release stating: “The elimination of lead from gas is one of the great environmental achievements of all time,” [EPA Administrator Carol M] Browner said. “Thousands of tons of lead have been

removed from the air, and blood levels of lead in our children are down 70 percent. This means that millions of children will be spared the painful consequences of lead poisoning, such as permanent nerve damage, anemia or mental retardation." The actions taken today, although procedural, mark the end of a quarter-of-a-century of work to keep Americans safe from exposure to lead from gas." (EPA US 1996)

1996 - World Bank calls for world phase-out of leaded gasoline (Kitman 2000b) and UK Friends of the Earth declares Octel Britain's filthiest factory in 1996. "Octel are reported to have released a total 5,340 tonnes (around 14 tonnes a day) of highly poisonous chemicals. These include chloroethane, vinyl bromide, and about 66 tonnes of lead, into the atmosphere about a town of between 70-80,000 residents." (Ryder 1999).

1996 - *Lead in Australian Children: Report On The National Survey Of Lead In Children* reports that: "In single-vehicle households the mean blood lead level [of children aged 1 to 4 years (inclusive)] is higher where the vehicle uses leaded petrol [6.62 µg/dL - 133% higher] than when it uses unleaded petrol... or [in households with two or more vehicles] than when all vehicles use unleaded petrol [4.97 µg/dL]." (Donovan et al 1996)

1996 Feb 20 - OECD member nations sign a Lead declaration placing lead petrol phase-out as the number one action for each OECD country. (OECD 1996)

1998 – The World Bank reports: "the exposure of adults to atmospheric lead has been connected to elevated blood pressure causing hypertension, heart attacks and premature death. *No lower threshold of exposure exists under which the adverse effects of lead on children and adults cannot be detected*"... "the magnitude of benefits estimated in the United States suggests that phasing out lead from gasoline is likely to produce substantial benefits in all countries." (Lovei 1998)

2000 - European Union bans leaded gasoline at the pump. (Kitman 2000b)

2000 Mar 20 - Kitman declares: "the benefits of lead antiknock additives were wildly and knowingly overstated in the beginning, and continue to be. Lead is not only bad for the planet and all its life forms, it is actually bad for cars and always was." (Kitman 2000c)

2002 – World Summit on Sustainable Development (WSSD) takes two decisions to protect children's health from exposure to lead. Firstly, the WSSD Plan of Implementation (POI) called for: "*Supporting the phasing out of lead in gasoline.*" One result of WSSD 2002 was that the United Nations Environment Programme (UNEP) set up the Partnership for Cleaner Fuels and Vehicles (PCFV) with a core goal of global elimination of leaded petrol.

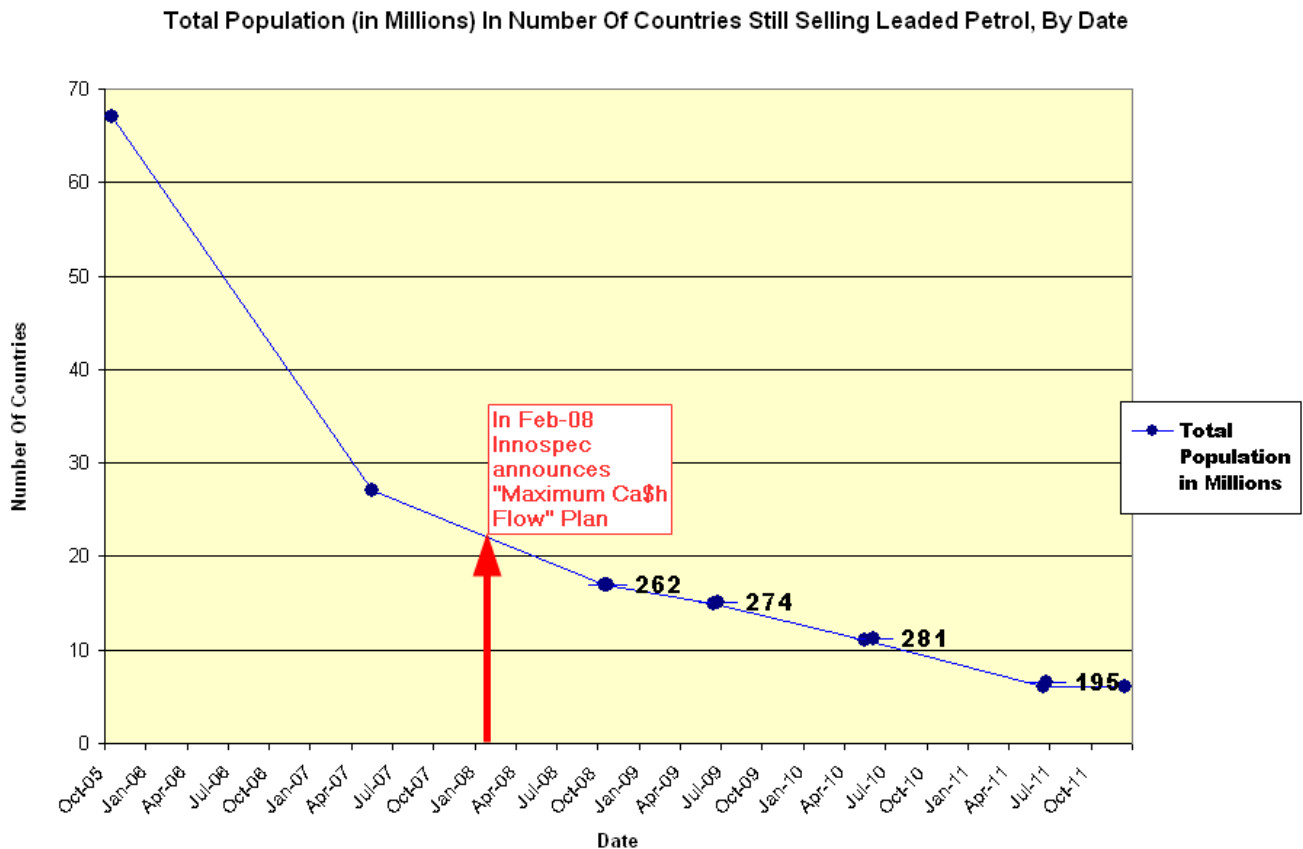
2002 Dec 27 - *Study links early adult deaths to lead - 30 million in U.S. could be at risk* – US researchers find that even low levels of lead in the blood, [mainly due to the use of leaded gasoline] raise blood pressure and are predicted to cause early death in as many as 30 million US adults. (Kotulak 2002)

2003 – The LEAD Group became the first Australian Partner of the PCFV and took a "watch and learn" attitude to see how the United Nations goes about achieving its goals. A: slowly.

2003 Oct 28 – "IPIECA's [International Petroleum Industry Environmental Conservation Association] Fuels and Vehicles Working Group addresses environmental issues related to the refining and distribution of fuels, in particular working towards the elimination worldwide of the use of lead as an additive in motor gasoline. IPIECA believes that the worldwide development of catalytic car exhaust technology, which leads to cleaner air in urban areas, should not be inhibited and that the developing world should benefit from

modern fuels which are available now in most countries. The removal of lead is important to public welfare because it will allow the introduction of widely available vehicle catalytic exhaust technology to improve air quality.” (IPIECA 2003)

2005 – “At a 2005 [PCFV] Partnership meeting held in Kenya, it was agreed that the partnership was on course to “phase out leaded gasoline by the end of 2008 worldwide.” (IFCS and US 2008) The LEAD Group first to publish a tally of countries still selling leaded petrol: 67 countries as at International Lead Poisoning Awareness Day, Oct 20. (O’Brien and Aitken 2005) - see graph for progress towards phase-out. NB Dec 31st 2011 is The LEAD Group’s target date for the end of the sale of leaded gasoline globally. See LEAD Group graph below.



(Data Sources: O’Brien and Aitken 2005, O’Brien 2007, Taylor 2008, Taylor 2009, Taylor 2010c, Taylor 2011)

2006 Jan – only remaining manufacturer of TEL changes its name from Octel to Innospec – “The name change was meant to emphasize that the firm, which had sales of \$528 million last year, now gets two-thirds of its sales from non-lead fuel additives and other specialty chemical businesses it has built over the years. "Lead is a declining product" that was associated with the Octel name, Jennings [Innospec's President and Chief Executive Officer] says.” (Reisch 2006)

2006 Jun 6 - SAICM (Strategic Approach to International Chemicals Management) releases *Global Plan of Action*: including: “Work areas addressing risk reduction (objective 1) Activit[y]: Eliminate lead in gasoline. Actors: National Governments, IOMC (UNEP, WHO, UNIDO, UNDP, World Bank), GEF, Industry. Targets/Timeframes: 2006-**2010**. Indicators of Progress: Lead in gasoline is eliminated. (SAICM 2006)

2006 Aug 23-25 – correspondence between The LEAD Group and Innospec: Incoming Email: Enquiry from Innospec Inc. website re: is Australian lead used to make lead petrol? Innospec:

We do not purchase our lead directly from Australia, but use a third party supplier. Outgoing email: Who? Incoming email: I understand it's Britannia [Britannia Refined Metals, BRM, a subsidiary of Xstrata]. (Sullivan and Farey 2006)

- 2006 Sept – US researchers propose a public health action level of 2 µg/dL replace the 1991 intervention blood lead level of 10 µg/dL for children due to “scientific, ethical, social, economic, and public health considerations” and because 2 µg/dL “represents a reasonable blend of scientific information, feasible policy alternatives, and analytical reliability.” (Gilbert and Weiss 2006)
- 2006 Sept 9 – The LEAD Group web-publishes *Lead Mining Stewardship - Grey Lead and the Role of The LEAD Group* fact sheet, proposing: “preventing lead from mining companies from being sold to the one manufacturer who uses lead to make the leaded petrol additive, that is, Innospec in the UK. If Innospec could not buy lead, hundreds of millions of children in the ... countries still selling leaded petrol would not have to wait until 2010 for the SAICM ... goal of a global lead petrol ban to be achieved.” (O’Brien et al 2006)
- 2008 – Beijing PCFV meeting acknowledges it will fail to meet its original target of a 2008 global leaded gasoline phaseout. The LEAD Group calls for a ban on Australian lead exports for TEL for road-use and asks Xstrata to stop supplying lead to Innospec via Britannia. (O’Brien et al 2008) and (O’Brien and Sara 2011)
- 2008 Feb 25 – Innospec state in their annual report for 2007: “We intend to manage the decrease in the sales of TEL for use in automotive gasoline to maximize the cash flow through the decline” (see the resultant slowdown in the rate of progress in the graph of leaded petrol countries above) and “The Company expects that it will cease all sales of TEL for use in automotive gasoline at some time in the next several years.” (Innospec 2008)
- 2009 Feb 20 – Innospec reports on Market Watch Website: “We expect that we will cease all sales of TEL for use in automotive gasoline in 2012.” (Innospec 2009)
- 2009 Sep – Germany sets new reference values [action levels] for blood lead, based on the 95th percentile of results of national blood lead surveys: 3.5 µg/dL as the goal for children (up to the age of 12) and for men and women - currently 9 µg/dL and 7 µg/dL respectively (Schulz et al 2009). These new goal blood lead levels are still the most stringent in the world as at 9 Dec 2011. Such low blood lead goals could not be achieved in any country still dependent on leaded gasoline but blood lead testing results in those countries still selling leaded petrol such as Afghanistan and Yemen, promised by PCFV (UNEP 2011), have not been forthcoming as at 9 Dec 2011.
- 2009 Sep 22 – The LEAD Group web-publishes *Dangers of a blood lead level above 2 µg/dL and below 10 µg/dL to both adults and children*. (Roberts et al 2009)
- 2010 Mar 18 - *Securities & Exchange Commission [SEC] v. Innospec, Inc., Civil Action. SEC FILES SETTLED FOREIGN CORRUPT PRACTICES ACT CHARGES AGAINST INNOSPEC, INC. FOR ENGAGING IN BRIBERY IN IRAQ AND INDONESIA WITH TOTAL DISGORGEMENT AND CRIMINAL FINES OF \$40.2 M.* (SEC 2010). The US SEC Complaint against Innospec names relevant entity Swiss-based Alcor, “a wholly owned subsidiary of Innospec” and states Alcor’s “financial results were consolidated with those of Innospec throughout the relevant period [2000-2007]”. (UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA 2010)
- 2010 July – Iraqi service station workers study finds the median (range) 14.1 (7.5-56) µg/dL lead in the blood of fuel stations workers was significantly higher [217% higher] than 6.5 (4.0-1.6) µg/dL in the controls (non-lead exposed workers). (Al-Rudainy 2010)

2010 Dec 2 – The LEAD Group updates 2009 annotated bibliography and web-publishes *Dangers of a blood lead level above 2 µg/dL and below 10 µg/dL to adults* (Taylor 2010a) and *Dangers of a blood lead level above 2 µg/dL and below 10 µg/dL to children* (Taylor 2010b).

2011 April –The estimated global annual impacts of lead in vehicle fuels found [by Hatfield and Tsai in a United Nations-commissioned report currently being peer-reviewed and expected to be published in 2011] to be significant:

- Close to **1.1 million deaths**;
- A loss of **322 million IQ points**;
- Close to **60 million crime cases**;
- Economic loss of **USD 2.4 trillion** per year (4% of global GDP)

(PCFV, UNEP 2011)

2011 June 17 – The LEAD Group updated <http://www.lead.org.au/fs/fst27.html> to show Afghanistan, Algeria, Iraq, Myanmar (Burma), North Korea and Yemen are the six remaining countries where leaded gasoline is possibly still being sold. (Taylor 2011)

2011 June 28 – The LEAD Group publishes *LEAD Action News V11N4 - Who will end the leaded petrol death trade?* Newsletter includes a UTS intern's research examining possible reasons preventing the above 6 remaining countries from phasing out leaded petrol (Roberts and Cooper 2011) and identifies 6 people who could act to end the era of leaded gasoline by the end of 2011: **Ivan Glasenberg**, Australia's 2nd-most wealthy citizen, CEO of Xstrata; **David Cameron**, Prime Minister of the UK; **Julia Gillard**, Prime Minister of Australia; **Barack Obama**, President of the USA; **Micheline Calmy Rey**, President of Switzerland; and **Patrick Williams**, Innospec's CEO. (O'Brien and Roberts 2011)



Patrick Williams

2011 June 28 – The LEAD Group asks US President Barack Obama: “Please ask SEC to seek further reparation from Innospec by ordering the company to stop making TEL for road use, and to buy back all stocks of TEL and pay for its transport back to the UK.” (O'Brien 2011a) [No reply received as at the date of this chronology, although Elizabeth has been advised by email on 10 Dec 2011 that a response is being prepared.]

2011 June 28 – The LEAD Group asks Swiss President Micheline Calmy-Rey to ask UK-incorporated Swiss mining giant Xstrata to stop supplying lead to Innospec and ask Alcor to make reparation by ordering them to stop supplying TEL for road use, and to buy back all stocks of TEL and pay for its transport back to the UK, (O'Brien 2011b), and was advised by her, in a letter dated Aug 2: “Switzerland is committed to the OECD Guidelines for Multinational Enterprises [OECD 2011]. Your letter will therefore be forwarded to the Swiss National Contact Point (NCP).” (Calmy-Rey 2011)

2011 June 28 – The LEAD Group asks Australian Prime Minister Julia Gillard to ban the export of lead that was destined to be made into leaded petrol. (O'Brien 2011c) Nov 15 reply received from Senator Don Farrell, Parliamentary Secretary for Sustainability and Urban Water, states, due to Australia's obligations in the World Trade Organisation and its free trade agreements, imposing restrictions or conditions on the export of Australian lead “cannot be justified”. (Farrell 2011)

- 2011 June 28 – The LEAD Group asks United Kingdom Prime Minister David Cameron to ban the export of TEL that was destined to be made into leaded petrol. (O'Brien 2011d) As at the date of this chronology, no reply has been received.
- 2011 June 28 – The LEAD Group asks Innospec CEO Patrick Williams to cease the supply of TEL for petrol. (O'Brien 2011e) As at the date of this chronology, no reply has been received.
- 2011 June 28 – The LEAD Group asks Xstrata CEO Ivan Glasenberg to cease the supply of Lead for TEL for petrol (by email and letter). (O'Brien 2011f). On 2 Aug 2011 the letter is returned from Mount Isa QLD with [handwritten] *RTS* on it. The LEAD Group phones Mt Isa Mine and is advised: "anyone who would know the correct address has gone home." A further phone call to Xstrata's Swiss Zug HQ results in the letter being posted to Switzerland. As at the date of this chronology, no reply has been received.
- 2011 Aug 25 – The LEAD Group sends a formal complaint and a solution involving Innospec within 6 weeks phasing out the sale of TEL for MOGAS, buying back unblended TEL sold for MOGAS, and "Remaining stocks should only be supplied to those OECD and non-OECD countries which have made exemptions under the Rotterdam Convention, to allow the use of TEL in aviation fuel (AvGas) in their country" (O'Brien 2011g) to the OECD NCPs of Switzerland, Australia, US and UK re: non-compliance of Innospec and Xstrata with the OECD Guidelines for MNE (OECD 2011). The US NCP requests a detailed complaint (which was sent Oct 25).
- 2011 Oct 5 to 12 – the PCFV Clearinghouse Secretariat refuses to engage with Innospec, due to their proven bribery of Indonesian and Iraq officials, or invite them to the next PCFV meeting to answer questions on which countries they still supply with TEL for automotive fuel (O'Brien and De Jong 2011).
- 2011 Oct 25 - Paragraph 6 of the OECD MNE Guidelines (OECD 2011) states that an enterprise should "Continually seek to improve corporate environmental performance, at the level of the enterprise and, where appropriate, of its supply chain". Accordingly The LEAD Group asks "That the OECD act urgently to mediate the cessation of supply of TEL for leaded petrol, and failing immediate success with that, that the OECD act urgently to mediate the cessation of supply of lead by Xstrata / BRM to Innospec for TEL for MOGAS, since Innospec is not abiding by the MNE Environmental Guidelines, then Xstrata / BRM is also not abiding by the Guidelines for Multinational Enterprises (MNE)" (Gethin-Damon and O'Brien 2011).
- 2011 Oct 26 & 27 – The LEAD Group presents its strategy to the Global Partnership Meeting of the PCFV in Nairobi and seeks to award Patrick Williams, CEO of Innospec as "Lead-Safe World Champion" for his hoped-for announcement of cessation of sale of petrol lead additive (Gethin-Damon et al 2011). The PCFV Clearing House report on when leaded gasoline will cease being sold in the six remaining countries is full of question marks but includes acceptance that "Innospec expects TEL sales to end 2012". (UNEP 2011) This dead-stop to PCFV progress / action on global phase-out before the end of 2011 creates an opening for others to act.
- 2011 Oct 27 – Associated Press reports in the Washington Post that "[leaded gasoline] is expected to be eradicated globally within two years [in 2013], the United Nations Environment Program announced Thursday [presumably Thu 27 Oct 2011]". (Associated Octel 2011)
- 2011 Nov 17 – "Based on its conclusions that blood lead levels below 10 µg/dL harm children, the [US] Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) recommends elimination of the use of the term 'blood lead level of concern.' It recommends the use of a reference value based on the 97.5th percentile of the NHANES-generated blood lead

distribution in children age 1-5 years (currently 5 µg/dL) to identify children with elevated blood lead levels.” (Malone 2011)

2011 Nov 17 – The LEAD Group asks Australian delegate Dr Barry Reville, Branch Head, Environment Protection Branch, Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) and US delegate Dr Ana Corado, Environmental Engineer, Environmental Assistance Division, Office of Pollution Prevention and Toxics, US EPA, who were both attending a SAICM meeting today in Belgrade, Serbia, to take action to inspire Innospec to buy back all stocks of tetra ethyl lead (TEL) used to make leaded petrol, as a way of marking the planned Side Event of the meeting, for planning the International Lead Poisoning Prevention Day of Action. (ICCM 2011)

2011 Nov 24 – The LEAD Group asks US NCP to OECD to ask Innospec *when* in 2012 they are planning to phase out sales of TEL for leaded gasoline for road-use (Yu 2011a).

2011 Nov 30 – Email from the PCFV Clearing House to The LEAD Group states: “UNEP and the PCFV Clearing House have been the major force in eliminating leaded petrol world wide, are actively working on this right now and will not stop until this is completed. Independent evaluations of the EU, US and UNEP have shown that 80+ countries having gone unleaded over the past years is a direct result of the work of the PCFV.” (De Jong 2011)

2011 Dec 1 – Tsai and Hatfield publish peer-reviewed assessment of the global benefits from the phase-out of leaded fuel: best estimate is a global benefit of \$2.45 trillion/year [4.27% of global GDP per year], within a range of \$2.05–\$2.83 trillion, including: child and adult health costs / discounted life earnings for children, \$1.07 trillion/year; global cost for children through IQ decrement, \$1.03 trillion/year; and \$275 billion/year on taxes forgone, ADHD, and lead linked crime. (Tsai and Hatfield, 2011)

2011 Dec 2 – Despite all of the evidence of the harmful effects of TEL, a UK website exists promoting bottled TEL in a product called TetraBOOST. According to the ‘TetraBOOST’ Website accessed today states:

- “TetraBOOST is genuine tetraethyl lead in a solution of aromatic hydrocarbons, with its associated chemical scrubbers. TetraBOOST enables you to make genuine leaded fuel from the unleaded pump, wherever and whenever you need it” (TetraBOOST 2000-2011a);
- “Malicious rumours have been circulating around the race paddocks and some clubs that TetraBOOST has been banned in Europe and is now illegal!. THIS IS **NONSENSE**. The directors of TetraBOOST would like to make it perfectly clear that no such ban exists, or is in preparation. We intend to continue to manufacture TetraBOOST as usual... “ (TetraBOOST 2000-2011b);
- “Tetraethyl lead waste leaves the exhaust system as tetraethyl lead salts which dissolve harmlessly in the rain” (TetraBOOST 2000-2011c);
- TetraBOOST leaded octane additive containing TEL can be purchased online and delivered throughout Europe and is still being distributed in the United Kingdom Belgium, The Channel Islands, Denmark, France, the Republic of Ireland, Northern Ireland, The Netherlands (Holland) and Sweden (TetraBOOST 2000-2011d);
- “TetraBOOST is now available for a number of [international distributors](#). These include Jersey, the Republic of Ireland, Denmark, France and Australia” (TetraBOOST 2000-2011b);



- “TetraBOOST is the **only** practical way to motor throughout the UK and Europe on leaded fuel - all the way there and all the way back. Indeed, a number of cars in the [Peking to Paris Motor Challenge](#) are running the entire distance on TetraBOOST leaded petrol (TetraBOOST 2010)“
- “We are the future of leaded fuel” (TetraBOOST 2000-2011b)

2011 Dec 2- According to the Innospec (undated) website accessed today despite the IPIECA Position noted above (IPIECA 2003) “...the economies of some countries continue to depend on this product [TEL]. They do not have cars with catalytic converters capable of running on unleaded fuel so TEL remains by far the most cost-effective octane enhancer available.” (Innospec Website accessed 2 Dec 2011).

2011 Dec 15 - US NCP for the OECD, phoned Elizabeth O’Brien to say that Innospec refuses to engage in the OECD mediation process to deal with The LEAD Group’s complaint against them “with obvious reputational risk for Innospec.” Elizabeth replies: “if the OECD or UK or US governments had ordered Innospec to make a non-lead octane additive for gasoline instead of TEL for MOGAS in 1993, every person born since then could have been saved from exposure to lead from petrol ie every child.” (Yu 2011b)

Steps remaining to achieve global leaded petrol phase-out:

- Innospec announces plan for completion of global leaded gasoline phase-out and advises all its TEL-for-MOGAS customers, including non-petroleum refinery customers, of the date of their final supply of TEL
- Innospec stops making TEL for MOGAS
- TetraBOOST stops adding TEL to TetraBOOST in Europe, for blending into petrol at the vehicle fuel-tank – the same applies if there are any other suppliers of TEL-containing products designed for blending with gasoline during automotive refuelling
- Innospec buys back all unblended TEL for MOGAS (for use in AVGAS) and pays for its shipment to countries where leaded AVGAS is permitted for use
- Innospec assists all 6 of the final leaded gasoline countries (and any countries that have ongoing issues of lead contamination from the past use of TEL in MOGAS) to safely dispose of toxic leaded fuel storage tank residues, TEL-contaminated infrastructure as well as lead-contaminated soil and groundwater used for drinking, caused by leaking leaded petrol storage tanks and fuel spills.
- Innospec stops making TEL altogether so that it is not possible for TEL for AVGAS to be diverted as TEL for MOGAS by unscrupulous dealers.

References:

NB: E-copies of all non-web-published or no-longer-online references (except the book by Walker) are available from The LEAD Group Inc. Please use the Contact Us form at <http://www.lead.org.au/cu.html> to request copies.

Al-Rudainy, Laith Abdulmajeed, Department of Community Medicine, College of Medicine, University of Basrah, Basrah, Iraq (2010) Blood Lead Level Among Fuel Station Workers,

Oman Med J. 2010 July; 25(3): 208-211,
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3191642/?tool=pubmed>

Annest, Joseph L; Pirkle, James L; Makuc, Diane; Neese, Jane; Bayse, David; & Kovar, Mary (1983) *Grace Chronological Trend In Blood Lead Levels Between 1976 And 1980 The National Health and Nutrition Examination Survey (NHANES)*, The New England Journal Of Medicine Vol 308 No 23, <http://www.nejm.org/doi/full/10.1056/NEJM198306093082301>

Associated Press, (2011) *United Nations: Leaded gasoline to be eliminated worldwide in two years after long fight*, Published: Oct 27 2011 in the Washington Post, reprinted 28 Oct 2011 in the Burma Digest (2011) <http://burmadigest.info/2011/10/28/burma-related-news-october-28-2011/>

Calmy-Rey, Micheline, the President of the Swiss Confederation (2011) *Micheline Calmy-Rey letter to Elizabeth O'Brien received 2/8/11 RE: Swiss companies Xstrata & Alcor & their activities linked with addition of lead to gasoline. Switzerland is committed to [implementing] the OECD Guidelines for Multinational Enterprises*, pers comm., 25 July 2011.

CDC (Centers for Disease Control and Prevention) (1991) *Preventing Lead Poisoning In Young Children - A Statement By The Centers For Disease Control [4th Revision of original 1975 strategy]*, Oct 1991, <http://wonder.cdc.gov/wonder/prevguid/p0000029/p0000029.asp>

Charnley, Gail (2000) *GAIL CHARNLEY - RISK ANALYSIS: PAST, PRESENT AND FUTURE*, INTERNATIONAL CONFERENCE: RISK ANALYSIS AND ITS ROLE IN THE EUROPEAN UNION 18 and 19 July 2000 Brussels, http://ec.europa.eu/food/risk/session5_1_en.pdf

De Jong, Rob (2011) *Email to Elizabeth O'Brien, The LEAD Group Inc RE: Can you help set a precedent? The global elimination of leaded petrol by the end of 2011*, UNEP Partnership for Cleaner Fuels and Vehicles (PCFV) Clearing House, Nov 30 2011.

Donovan, John; with assistance from Anderson, Phil; Daley, Caroline; Lea, Tony; and Luhse, Peter (1996) *Lead in Australian Children: Report On The National Survey Of Lead In Children*, AIHW (Australian Institute of Health & Welfare), 1996,
http://www.lead.org.au/Lead_in_Australian_children.pdf

EPA US (Environmental Protection Agency, United States) (1996), *EPA Takes Final Step in Phaseout of Leaded Gasoline*, <http://www.epa.gov/history/topics/lead/02.html>

Farrell, Don, (2011) *Letter dated 9 Nov 2011 from Senator The Honorable Don Farrell RE: Elizabeth O'Brien's correspondence of 28 June 2011 to the Prime Minister, the Hon Julia Gillard MP, concerning leaded petrol*. Letter received 15 Nov 2011 by The LEAD Group Inc.

Funding Universe (1996) *Company Histories & Profiles: Ethyl Corporation*
<http://www.fundinguniverse.com/company-histories/Ethyl-Corporation-Company-History.html>

Albermarle (2011) *Albermarle - History PROUD PAST, BRIGHT FUTURE*, Albermarle, undated, circa Dec 2011, accessed 22 Dec 2011, [HTTP://WWW.ALBEMARLE.COM/ABOUT/HISTORY-10.HTML](http://www.albermarle.com/about/history-10.html) ; PRINT VERSION:
[HTTP://WWW.ALBEMARLE.COM/FW/MAIN/FW_PRINT.ASP?PRINTLAYOUTID=6](http://www.albermarle.com/fw/main/fw_print.asp?printlayoutid=6)

Gethin-Damon and O'Brien, Elizabeth (2011) *OECD Guidelines to Multinational Enterprises: The Case Against Innospec's Continued Sale of TEL for Leaded Gasoline / Leaded Petrol - The*

exact provisions of the OECD Guidelines to Multinational Enterprises not abided by Innospec,
The LEAD Group Inc, 25 Oct 2011.

Gethin-Damon, Zac and O'Brien, Elizabeth; edited by Roberts, Anne (2011) *PCFV Partner's Action to Make Leaded Gasoline History - 26-27 October 2011 Nairobi [re: ending the era of leaded petrol / leaded gasoline - presentation by The LEAD Group at United Nations Global Partnership Meeting of PCFV]* 26 Oct 2011,

<http://www.lead.org.au/bblp/TLG%20Presentation%20at%20Nairobi%2020111026-27/Gethin-Damon+Nairobi+Presentation+20111026-27.ppt> ; see link at
<http://www.unep.org/transport/PCFV/meetings/9GPM.asp>

Gilbert, Steven G. and Weiss, Bernard (2006) *A rationale for lowering the blood lead action level from 10 to 2 µg/dL*, *Neurotoxicology*. 2006 September; 27(5): 693-701,
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2212280/pdf/nihms37310.pdf>

ICCM (International Conference on Chemicals Management) (2011) *International Lead Poisoning Prevention Day of Action - Elimination of Lead Paint ; Side event to be held on Thursday 17 November 2011 at the first meeting of the Open-ended Working Group (OEWG) of the International Conference on Chemicals Management*, International Conference on Chemicals Management (ICCM), Hosted by United States Environmental Protection Agency (US EPA) and the Government of Nigeria as a contribution to the Global Alliance to Eliminate Lead Paint (GAELP), 1 November 2011 <http://www.saicm.org/documents/OEWG/OEWG1-side-event%20bronchure%20final.pdf>

IFCS and US (2008) *DRAFT FOR COMMENT BY 18 FEBRUARY 2009 - Emerging policy issues: Draft information document on lead in paints*, SAICM (Strategic Approach to International Chemicals Management), 9 Feb 2008,
<http://www.saicm.org/documents/iccm/ICCM2/emerging%20issues/Draft%20information%20document+Lead.doc>

Innospec Incorporated (2008) *Innospec Annual Report 2007: For the fiscal year ended December 31, 2007. Form 10-K, Annual Report Pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934*, United States Securities Exchange Commission, Washington D.C. 20549,
http://www.innospecinc.com/assets/files/documents/apr_08/cm_1207823244_10-K_-_31.12.07.pdf

Innospec Incorporated (2009) - *Management's Discussion and Analysis of Financial Condition and Results of Operations*, Market Watch, Feb. 20, 2009, previously at
http://www.marketwatch.com:80/news/story/10-k-innospec-inc/story.aspx?guid=%7B8AD18556-0246-4C00-B42A-2ACD1C2947B0%7D&dist=msr_1

Innospec Incorporated (2011) *Innospec Annual Report 2010: ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934. For the fiscal year ended December 31, 2010*. INNOSPEC INC. March 2011,
http://www.innospecinc.com/assets/files/documents/apr_11/cm_1301911642_Form_10-K_2011.pdf

Innospec Incorporated (undated) *Octane Additives*, Innospec Website accessed 2 Dec 2011,
<http://www.innospecinc.com/octane-additives.html>

IPCS (International Programme on Chemical Safety) (1995) *Environmental Health Criteria for Inorganic Lead*, United Nations Environment Programme (UNEP) the International Labour

Organisation (ILO) and the World Health Organization (WHO),
<http://www.inchem.org/documents/ehc/ehc/ehc165.htm>

IPCS of the World Health Organisation (WHO) (1977) *Environmental Health Criteria: No. 3 Lead*,
<http://www.inchem.org/documents/ehc/ehc/ehc003.htm>

IPIECA (International Petroleum Industry Environmental Conservation Association) (2003) *Getting the lead out: Downstream strategies and resources for phasing out leaded gasoline*,
<http://www.ipieca.org/publication/getting-lead-out-downstream-strategies-and-resources-phasing-out-leaded-gasoline>

Kitman, Jamie Lincoln (2000a) *We Visit Octel*, The Nation, 20 Mar 2000,
<http://globalleadnet.com/135/the-secret-history-of-lead-octel>

Kitman, Jamie Lincoln (2000b) *8,500 Years Of Lead, 79 Years Of Leaded Gasoline*, The Nation, 20 Mar 2000, <http://www.thenation.com/article/timeline>

Kitman, Jamie Lincoln (2000c) *The Secret History Of Lead*, The Nation, 20 Mar 2000,
<http://www.thenation.com/article/secret-history-lead?page=full>

Kotulak, Ronald (2002) *Study links early adult deaths to lead - 30 million in U.S. could be at risk*, originally published Chicago Tribune, 27 Dec 2002 at
www.chicagotribune.com/features/health/chi-0212270325dec27,1,3244427.story [no longer online as at 9 Dec 2011]

Kovarik, William (2011) *CHRONOLOGY OF LEAD AND LEADED GASOLINE*, Radford University, 18 Nov 2011, <http://www.radford.edu/~wkovarik/envhist/TEL.Chronology.html>

Lean, Geoffrey (2011) *Pollution: triumph of the inconvenient truth, Derek Bryce-Smith's warnings about lead in petrol made him a public health hero*, The Telegraph 29 July 2011,
<http://www.telegraph.co.uk/earth/environment/8671336/Pollution-triumph-of-the-inconvenient-truth.html>

Lovei, Magda (1998) *Phasing Out Lead From Gasoline - Worldwide Experience And Policy Implications*, World Bank Technical Paper No: 397 - Pollution Management Series,
http://www.worldbank.org/external/default/WDSContentServer/WDSP/IB/1998/01/01/000009265_3980312111309/Rendered/PDF/multi_page.pdf

Malone, Jane (2011), *US ACCLPP recommends >5 µg/dL to identify children with "elevated blood lead levels" and reiterates: Low Level Lead Exposure Harms Children - A Renewed Call for Primary Prevention*, 17 Nov 2011 Email sent by National Center for Healthy Housing (NCHH), reprinted with permission with new title by The LEAD Group Inc,
http://www.lead.org.au/fs/Low_Level_Lead_Exposure_Harms_Children_20111117.pdf

Murdock, Barbara Scott (2005) *Tracking toxins: Biomonitoring outshines the indirect assessment of exposure in determining which pollutants enter the body, and whether they cause disease or disability*, European Molecular Biology Organization (EMBO) Rep. 2005 August; 6(8): 701-705, <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1369152/>

O'Brien, Elizabeth (2007) *Countries where Leaded Petrol is Possibly Still Sold for Road Use As at 24th May 2007*, The LEAD Group, 24 May 2007
http://www.lead.org.au/fs/fst27_20070524.html

- O'Brien, Elizabeth (2011a) *Letter to President Obama - you have the ability to end the use of TEL in gasoline*, The LEAD Group Inc, 28 June 2011
- O'Brien, Elizabeth (2011b) *Letter to Swiss President Micheline Calmy Rey you have the power to end the use of TEL in gasoline*, The LEAD Group Inc, 28 June 2011
- O'Brien, Elizabeth (2011c) *Letter to Prime Minister Australia Julia Gillard will you stop Australian Lead in TEL for petrol*, The LEAD Group Inc, 28 June 2011
- O'Brien, Elizabeth (2011c) *Letter To: Prime Minister Australia Julia Gillard will you stop Australian Lead in TEL for petrol*, The LEAD Group Inc, 28 June 2011.
- O'Brien, Elizabeth (2011d) *Letter To: UK Prime Minister David Cameron - you have the ability to end the use of TEL in petrol*, The LEAD Group Inc, 28 June 2011.
- O'Brien, Elizabeth (2011e) *Letter To: Innospec CEO Patrick Williams please cease the supply of TEL for petrol*, The LEAD Group Inc, 28 June 2011.
- O'Brien, Elizabeth (2011f) *Letter To: Xstrata CEO Ivan Glasenberg Please cease the supply of Lead for TEL for petrol*, The LEAD Group Inc, 28 June 2011.
- O'Brien, Elizabeth (2011g) *Letter To: NCPs (OECD National Contact Points) of Switzerland, Australia {Frank diGeorgio}, the United States and the United Kingdom; CC: Prof Hatfield; James Rochow; RE: Mediation to end the sale of leaded petrol globally*, 27 Aug 2011.
- O'Brien, Elizabeth and Aitken, Madeline (2005) *Countries possibly still to ban leaded petrol as at 20th October 2005 [67 countries]*, The LEAD Group Inc, 20 Oct 2005, <http://www.lead.org.au/fs/fst27superseded.html>
- O'Brien, Elizabeth and De Jong, Rob (2011) *Discussion between Elizabeth O'Brien of The LEAD Group and Rob De Jong of UNEP Partnership for Cleaner Fuels and Vehicles (PCFV) Re inviting Innospec to the PCFV Global Partnership Meeting (GPM) 2011 in Nairobi, dated from 5 Oct 2011 to 12 Oct 2011*, The LEAD Group Inc and PCFV
- O'Brien, Elizabeth and Roberts, Anne (2008) *Time for ban on export of Australian lead for petrol*, The LEAD Group Inc, 6 April 2008, <http://www.lead.org.au/mr/20080406.html>
- O'Brien, Elizabeth and Roberts, Anne (2011) *Editorial: Who will be the champion of a world free from leaded petrol?* LEAD Action News V11N4, The LEAD Group Inc, 28 June 2011, <http://www.lead.org.au/lanv11n4/lanv11n4-1.html> ; PART OF <http://www.lead.org.au/lanv11n4/LEAD Action News Vol 11 No 4.pdf>
- O'Brien, Elizabeth and Sara, Sue (2011) *Lead Letters - Asking The Lead Supplier To Cease Supply*, Published online 1 Aug 2008 by The LEAD Group Inc, O'Brien letter dated 20 May 2008, Sue Sara letter dated 3 June 2008, web-published with kind permission of Corporate Affairs Queensland, Xstrata, <http://www.lead.org.au/lanv9n1/lanv9n1-3.html>
- O'Brien, Elizabeth; Roberts, Anne; Smith, Ian; Edited by Sullivan, Rachelle (2006) *Lead Mining Stewardship Grey Lead and the Role of The LEAD Group*, The LEAD Group Inc, 7 Sep 2006, <http://www.lead.org.au/fs/fst31.html>
- OECD (2011) *OECD Guidelines for Multinational Enterprises [MNE] - RECOMMENDATIONS FOR RESPONSIBLE BUSINESS CONDUCT IN A GLOBAL CONTEXT*, OECD Ministerial Meeting, 25 May 2011 <http://www.oecd.org/dataoecd/43/29/48004323.pdf>

- OECD (Organisation for Economic Cooperation & Development) (1991) *RESTRICTED Draft - Co-Operation On Existing Chemicals: Risk Reduction Lead Country Report on Lead*
- OECD (Organisation for Economic Cooperation & Development) (1996) *Resolution Of The Council Concerning The Declaration On Risk Reduction For Lead*,
[http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=C\(96\)42/FINAL&docLanguage=En](http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=C(96)42/FINAL&docLanguage=En)
- PCFV (Partnership for Clean Fuels & Vehicles), UNEP (United Nations Environment Program) (2011) *Outcome and influence evaluation of the UNEP based Partnership for Clean Fuels & Vehicles (PCFV) [incl. Pg 6: "The Global Benefits of Phasing Out Leaded Fuel" re: Hatfield & Tsai study findings re: global crime, deaths, IQ loss & economic loss per annum]*, PCFV (Partnership for Clean Fuels & Vehicles), UNEP (United Nations Environment Program), 1 April 2011
http://www.unep.org/Transport/PCFV/PDF/leadEvaluation_summaryreport.pdf
- PHS US (Public Health Service, United States) (1925) *Proceedings Of A Conference Determine Whether Or Not There Is A Public Health Question In The Manufacture, Distribution, Or Use Of Tetraethyl Lead Gasoline, Prepared by Direction of the Surgeon General*, Public Health Bulletin No. 158, Treasury Department, United States Public Health Service, August 1925, web-published as 8 large image files under the title "Transcript of 1925 Tetraethyl Lead Conference" at
<http://www.lead.org.au/bellsystemleadpoisoning/Scanned%20document%20library.htm>
- Reisch, Mark (2006) *Getting The Lead Out: Innospec's new name and stock listing are part of ongoing specialties strategy*, Business, Chemical and Engineering News published by the American Chemical Society, April 24, 2006, Volume 84, Number 17, p.26
<http://pubs.acs.org/cen/business/84/8417bus2.html>
- Robbins, N; Zhang, Z; Sun, J; Ketterer, M; Lalumandier, J; Shulze, R (2010) *Childhood lead exposure and uptake in teeth in the Cleveland area during the era of leaded gasoline*, Science of the Total Environment 408 (2010) 4118-4127 ,
http://schubertcenter.case.edu/synapseweb46/documents/en/US/Robbins_2010_childhood_lead_exposure.pdf
- Roberts, Anne, Editor of LEAD Action News, based on the research paper by Cooper, Danielle, LEAD Group Intern and Social Inquiry and International Law student, University of Technology Sydney (UTS) (2011), *Six countries still used leaded petrol. Why? How the various factors relate to the continued use of leaded petrol; Democracy and the Elimination of Leaded Petrol in 2006; Press Freedom; Per Capita Gross Domestic Product*, LEAD Action News V11N4, The LEAD Group Inc, 28 June 2011, <http://www.lead.org.au/lanv11n4/lanv11n4-5.html> ; <http://www.lead.org.au/lanv11n4/lanv11n4-6.html> ; <http://www.lead.org.au/lanv11n4/lanv11n4-7.html> ; <http://www.lead.org.au/lanv11n4/lanv11n4-8.html> ; <http://www.lead.org.au/lanv11n4/lanv11n4-9.html> ; PART OF [http://www.lead.org.au/lanv11n4/LEAD Action News Vol 11 No 4.pdf](http://www.lead.org.au/lanv11n4/LEAD_Action_News_Vol_11_No_4.pdf)
- Roberts, Anne; O'Brien, Elizabeth and Taylor, Robert (2009) *Dangers of a blood lead level above 2 µg/dL and below 10 µg/dL to both adults and children*, The LEAD Group Inc, 22 Sep 2009, hyperlinks updated 14 Mar 2011,
[http://www.lead.org.au/fs/Dangers of BPb Level Above 2ug dL and Below 10ug dL 20110314.pdf](http://www.lead.org.au/fs/Dangers_of_BPb_Level_Above_2ug_dL_and_Below_10ug_dL_20110314.pdf)

- Ryder, Ralph (1996) *GUILTY OCTEL [now Innospec] SHOW NO REMORSE - Chemical Co fork out £290,000 for toxic leak that 'didn't' endanger community*, Originally published online in ToxCat Vol 2 No 2 pg.8-10, UK Spring 1996, web-published with permission of Ralph Ryder, by The LEAD Group, 29 Nov 2011, http://www.lead.org.au/ToxCat_Vol_2_No_2%20edited.pdf
- Ryder, Ralph (1999) *OPERATING WITHIN STRICT ENVIRONMENT AGENCY LEVELS THIS COMPANY - OCTEL [NOW CALLED "INNOSPEC"] RELEASED 5,340 TONNES OF POISONOUS CHEMICALS IN ONE YEAR - NO THREAT TO HUMAN HEALTH CLAIM "POVERTY THE CAUSE OF ILL-HEALTH NOT POLLUTION" SAYS TOWN'S MP*. Originally published online in ToxCat Vol 2 No 14 February 1999, Published with permission and correction of Ralph Ryder by The LEAD Group 8 Dec 2011, http://www.lead.org.au/Toxcat/ToxCat_Vol_2_No_14_Octel.pdf
- SAICM (Strategic Approach to International Chemicals Management) (2006) *Global Plan of Action*, page 33 of 84, 6 June 2006 [no longer online as at 17 June 2011].
- Schulz, C., Angerer, J., Ewers, U., Heudorf, U., Wilhelm, M., on behalf of the Commission on Human Biomonitoring of the German Federal Environment Agency (2009) *Revised and new reference values for environmental pollutants in urine or blood of children in Germany derived from the German Environmental Survey on Children 2003-2006 (GerES IV)*. International Journal of Hygiene and Environmental Health 212, 637-647, Sep 2009, <http://dx.doi.org/10.1016/j.ijheh.2009.05.003>
- Schwartz, Joel; Pitcher, Hugh; Levin, Ronnie; Ostro, Bart; Nichols, Albert L; (1985) *Costs And Benefits Of Reducing Lead In Gasoline: Final Regulatory Impact Analysis*, Environment Protection Authority (EPA) US, [http://yosemite.epa.gov/ee/epa/eerm.nsf/vwAN/EE-0034-1.pdf/\\$file/EE-0034-1.pdf](http://yosemite.epa.gov/ee/epa/eerm.nsf/vwAN/EE-0034-1.pdf/$file/EE-0034-1.pdf)
- SEC (US Securities and Exchange Commission) (2010) *Securities & Exchange Commission v. Innospec, Inc., Civil Action. SEC FILES SETTLED FOREIGN CORRUPT PRACTICES ACT CHARGES AGAINST INNOSPEC, INC. FOR ENGAGING IN BRIBERY IN IRAQ AND INDONESIA WITH TOTAL DISGORGEMENT AND CRIMINAL FINES OF \$40.2 M*, SEC (US Securities and Exchange Commission), 18 Mar 2010 <http://www.sec.gov/litigation/litreleases/2010/lr21454.htm>
- Sexton, Ken; Needham, Larry; Pirkle, James: Human Biomonitoring of Environmental Chemicals - Measuring chemicals in human tissues is the "gold standard" for assessing people's exposure to pollution. AMERICAN SCIENTIST January-February 2004. <http://www.americanscientist.org/issues/feature/2004/1/human-biomonitoring-of-environmental-chemicals> (Abstract) http://www.cdc.gov/biomonitoring/pdf/AS_article_biomonitoring.pdf (Full)
- Shy, Carl M (1990) *Lead In Petrol: The Mistake Of The XXth Century [ABSTRACT]*, World Health Statistics Quarterly 43 (1990) - World Health Stat Q. 1990;43(3):168-76, <http://www.ncbi.nlm.nih.gov/pubmed/2238697>.
- Sullivan, Rachelle, Intern, The LEAD Group; and Farey, Diane, Site Communications Manager, Innospec Inc, UK, *Inquiry from The LEAD Group regarding supply of lead from Australian mines to Innospec. Reply from Innospec's Diane Farey: I understand [the third party supplier is] Britannia*, pers comm. Sullivan email dated Aug 25, 2006], Diane Farey emails dated Aug 23 and Aug 25, 2006.
- Taylor, Robert (2008) *Countries where Leaded Petrol is Possibly Still Sold for Road Use As at 8th October 2008. Total Population Directly Affected: 262,452,533*, The LEAD Group, 8 October 2008, http://www.lead.org.au/fs/fst27_20081008.html

- Taylor, Robert (2009) *Countries where Leaded Petrol is Possibly Still Sold for Road Use As at 22nd June 2009. Total Population Directly Affected: 274,249,081*, The LEAD Group, 22 Jun 2009, http://www.lead.org.au/fs/fst27_20090622.html
- Taylor, Robert (2010a) *Dangers of a blood lead level above 2 µg/dL and below 10 µg/dL to adults*, The LEAD Group, 2 Dec 2012, http://www.lead.org.au/fs/Dangers_of_BPb_Level_Above_2ug_Adults_20101202.pdf
- Taylor, Robert (2010b) *Dangers of a blood lead level above 2 µg/dL and below 10 µg/dL to children*, The LEAD Group, 2 Dec 2012, http://www.lead.org.au/fs/Dangers_of_BPb_Level_Above_2ug_children_20101202.pdf
- Taylor, Robert (2010c) *Countries Where Leaded Petrol is Possibly Still Sold for Road Use 280,583,921 TOTAL POPULATION DIRECTLY AFFECTED in Afghanistan, Algeria, Bosnia & Herzegovina, Egypt, Iraq, N. Korea, Kosovo, Montenegro, Myanmar, Serbia, Yemen*, The LEAD Group, 5 May 2010, http://www.lead.org.au/fs/fst27_20100510.html
- Taylor, Robert (2011) *Countries Where Leaded Petrol is Possibly Still Sold for Road Use 194,770,689 TOTAL POPULATION DIRECTLY AFFECTED in Afghanistan, Algeria, Iraq, N. Korea, Myanmar, Yemen*, The LEAD Group, 17 Jun 2011 <http://www.lead.org.au/fs/fst27.html>
- TetraBOOST Limited (2000-2011a), *Frequently Asked Questions: 2. Is TetraBOOST a lead substitute?* TetraBOOST Website, Accessed 2 Dec 2011, <http://www.tetraboost.com/info/faq/#q2>
- TetraBOOST Limited (2000-2011b), *Welcome to TetraBOOST*, TetraBOOST Website homepage, Accessed 2 Dec 2011, <http://www.tetraboost.com/>
- TetraBOOST Limited (2000-2011c), *Frequently Asked Questions: 26. Am I polluting the environment?* TetraBOOST Website, Accessed 2 Dec 2011, <http://www.tetraboost.com/info/faq/#q26>
- TetraBOOST Limited (2000-2011d), *Distributors*, TetraBOOST Website, Accessed 2 Dec 2011, <http://www.tetraboost.com/info/distributors/>
- TetraBOOST Limited (2010) *Press Release – October 2010, TetraBOOST Price Increase*, Oct 2010, <http://www.tetraboost.com/press/october2010.php>
- Tsai, Peter L and Hatfield, Thomas H (2011) *Global Benefits From the Phaseout of Leaded Fuel - Going Unleaded* Journal of Environmental Health, December 2011, (Volume 74, Number 5, pp. 8-14), a publication of the National Environmental Health Association (NEHA), US, 1 Dec 2011, <https://www.neha-ecommerce.org/imispublic/Core/Orders/category.aspx?catid=172> ; also web-published, with permission of NEHA by The LEAD Group at http://www.lead.org.au/Global_Benefits_from_the_Phaseout_of_Leaded_Fuel-Going_Unleaded_201112.pdf
- UNEP (2011) *Clearing House Presentations, 9 GPM 26 October [2011] including Map of Leaded petrol phase-out Global Status and Matrix of Phase out of leaded petrol - remaining countries - CH activities; Innospec expects TEL sales to end 2012*, UNEP (United Nations Environment Programme) Clearing House of the Partnership for Clean Fuels and Vehicles (CH of PCFV), 26 October 2011 http://www.unep.org/transport/PCFV/PDF/9GPM/UNEP_CH_progressreports_pcfvgovernance.pdf

UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA (2010) *UNITED STATES DISTRICT COURT FOR THE DISTRICT OF COLUMBIA: U.S. SECURITIES AND EXCHANGE COMMISSION, Plaintiff Vs INNOSPEC, INC., Defendant. Civil Action No. Case: 1:10-cv-00448. 3/18/2010. Complaint re Innospec bribery 2000-2007 Iraq & Indonesia, SEC (US Securities and Exchange Commission), 18 Mar 2010* <http://www.sec.gov/litigation/complaints/2010/comp21454.pdf>

Walker, Gabrielle (2007) *An Ocean of Air: Why the Wind Blows and Other Mysteries of the Atmosphere*, Bloomsbury.

Walsh, Michael (1999) *Earth Summit Watch: Programs - The global phaseout of leaded gasoline: A Successful Initiative*, Earth Summit Watch <http://earthsummitwatch.org/gasoline.html>

World Resources Staff (1998) *Laden with lead, in EarthTrends*, http://earthtrends.wri.org/pdf_library/feature/ene_fea_lead.pdf

Yu, Alan, OECD NCP (National Contact Point) for USA, U.S. Department of State (2011a) *pers comm with Elizabeth O'Brien*, The LEAD Group Inc, 24 Nov 2011.

Yu, Alan, OECD NCP (National Contact Point) for USA, U.S. Department of State (2011b) *pers comm with Elizabeth O'Brien*, The LEAD Group Inc, 15 Dec 2011.

Sign-on Letter to Innospec CEO

[Publisher's note: "What's this talk of ending leaded petrol in 2013 or later?" says Elizabeth O'Brien, President of The LEAD Group. "**Not on my watch!** If we don't hear from Innospec with a TEL for MOGAS cessation of supply date before 31st December 2011, we're renaming our 'Campaigner for the End of Leaded Petrol by the End of 2011' to 'Campaigner for the End of Leaded Petrol by the End of January 2012.' Thanks to all the people who signed on to this letter and those who would have, had they not been on leave.]"

From: The LEAD Group

Sent: Friday, December 23, 2011 9:01 PM

To: Patrick Williams

Subject: Please give the gift of global lead petrol phase-out this Christmas

Dear Mr Williams,

please find attached a sign-on letter with signatories from 23 countries:

AUSTRALIA, BRAZIL, CAMEROON, CANADA, CHINA, COLOMBIA, ETHIOPIA, GHANA, INDIA, IRAQ, KENYA, MALAYSIA, MEXICO, NIGERIA, PARAGUAY, PHILIPPINES, SRI LANKA, TANZANIA, TOGO, TUNISIE / TUNISIA, UGANDA, UNITED KINGDOM, and USA.

It would be really wonderful if you could make an announcement this week about the end of supply of TEL for MOGAS.

All the best for Christmas and the New Year to you and your family. I really hope you can give this precious gift to the people of earth.

Yours Sincerely

Elizabeth O'Brien

23 December 2011



The Lead Education and Abatement Design Group Incorporated

aims to eliminate lead poisoning globally and to ensure that
the ecosystem is protected from lead in all its uses.

ABN 25 819 463 114

Patrick Williams,
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Cheshire, UK, CH65 4EY
Innospec Inc - USA Office
200 Executive Dr, Newark,
Denver, USA, 19716

patrick.williams@innospecinc.com

Dear Mr Williams,

We, the undersigned, note that Innospec's AVTEL/AVGAS leaded aviation fuels business improved its sales by 21% from 2010; Innospec earnings per share increased for the third quarter 2011 year-over-year to \$0.93; total revenues for the third quarter were \$202.1 million, a 16% increase from \$174 million in last year's third quarter and Innospec is \$46.9 million in cash and cash equivalents in the black, as of 30 September 2011.

Could you please direct that Innospec forego a small amount of profit in 2012, by ordering that the company immediately cease the supply of tetra-ethyl lead (TEL) for MOGAS, as the main continuing easily-replaceable source of lead exposure for the people of earth is leaded petrol.

This would constitute the world's first successful phase-out of a toxic substance and the end of the 90 year era of leaded petrol which has cost billions of IQ points, early death for millions of people and has contributed to delinquency and serious crime – yet another effect of early childhood poisoning by lead.

Your announcement of the date of the cessation of sale of TEL for MOGAS would make an historic precedent in responsible multinational enterprise achievement and a gift of health for the world, this Christmas.

Yours sincerely,

Elizabeth O'Brien,
President, The LEAD Group Inc.
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Dr. Garth Alperstein
Consultant, Child Public Health, Technical Advisory Board Member of The LEAD Group,
[Paediatrician who carried out the home lead assessment to investigate the lead poisoning of
Elizabeth O'Brien's children, which was discovered in 1991 and later found by a CSIRO study to be
majorly from lead in petrol (car engines and exhausts stripped by previous home-owners in back
yard and shed; lead-contaminated motor oil dumped on ground; carpet dust, ceiling dust and soil
contaminated with vehicle emission fallout). Dr Alperstein's observation: "I was expecting to see
peeling paint everywhere but the paint is in perfect condition." Dr Alperstein's advice re: sources
of lead contamination was quintessential in inspiring Elizabeth's advocacy for the elimination of
leaded petrol. He said: "if you have a faucet that's flooding your house with water, you don't start
cleaning it up until you've turned off the tap."]
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Timeline of leaded aviation fuel

By Robert Taylor, Researcher for The LEAD Group Inc, Australia, 23rd December 2011

1921 - TEL (Tetra-ethyl lead) added as an anti-knock agent to gasoline by Thomas Midgely.

1922 - Army experiments with TEL in airplane fuel but does not adopt it.

1923 - Leaded gasoline (blended at a petrol refinery) for automobiles sold.

1926 - US navy successfully experiments with adding TEL directly to fuel.

1930 - US army certifies fuel with up to 3ml/gallon of TEL additive.

1934 - British aviation fuel standards allow up to 4 ml/imperial gallon of TEL.

1939 - First jet powered aircraft flight. Jet fuel does not contain lead.

1937 - Ten of fourteen types of aviation gasoline in the USA contain TEL. Unleaded fuel is only used in low-performance engines but most fuel is still unleaded.

1942 - Introduction of super-chargers increases the importance of TEL. Super-charged planes use a minimum 100/130 grade gasoline which contains up to 3 ml/gallon while higher performance super-charged planes use 130/145 grade which contains up to 8 ml/gallon.

1947 - US ASTM D910 aviation fuel standard for piston engined aircraft first applies. The standard only permits the absence of TEL in low-performance fuel. Majority of low performance fuel unleaded.

1954 - Majority of low performance US fuel contains TEL.

1970 - US passes Clean Air Act.

1971 - Introduction of 100LL (low lead) aviation gasoline with a limit of 2 ml/gallon of TEL. Quickly becomes dominant fuel type due to similarity to 100/130 grade.

1981 - Hjelmsco oil releases unleaded aviation gasoline that can be used in low-performance aircraft after a break-in period using 100LL. It is only certified for use in Europe and Japan.

1993 - Ethyl Corporation ends manufacture of lead anti-knock compounds with the closure of its Canadian plant; instead markets additives purchased from the Associated Octel Company Limited (later renamed "Innospec"), the world's only remaining producer of AvTEL (TEL for aviation fuel).

1995 - Ban on use of leaded gasoline in automobiles in USA.

1998 - Unleaded 82 UL (unleaded) is approved for some low performance aircraft. But it is unsuitable for high performance aircraft which consume the bulk of leaded fuel.

2006 - US NGO Friends of the Earth petitions US EPA over aircraft lead emissions.

2008 - EPA lowers air standard for lead from 1.5 to 0.15 micrograms per cubic meter.

2011 - Friends of the Earth announce they will sue the EPA over aircraft lead emissions. Plans announced to develop 100 VLL (very low lead), with a lower level of TEL than 100LL. US company Swift Fuel obtains US certification for UL102, an unleaded fuel suitable for higher performance aircraft. As of 2011, however, no unleaded fuel is certified for all aircraft using 100LL.

Suggested Reading

AOPA (Aircraft Owners and Pilots Association) "Issues related to Lead in Avgas" *AOPA online*

<http://www.aopa.org/whatsnew/regulatory/reglead.html>

Desrosier, Walter & France, Mike (2011) "Beyond 100LL: Next Steps in Addressing Leaded Aviation Gasoline" *2011 ACI-NA Environmental Affairs Conference June 27, 2011*

<http://www.aci-na.org/static/conferences/enviro%202011/Monday/W.%20Desrosier%20-%20Leaded-Avgas-Next-Steps-2011.pdf>

Ells, Steve (2011) "Avgas Alternatives" *Flying Feb 15*, <http://www.flyingmag.com/aircraft/modifications-maintenance/avgas-alternatives?page=0,0>

Epstein, Curt "EPA begins ruling process to phase out leaded avgas" *AIN [Aviation International News] Online*

September 2010 <http://www.ainonline.com/?q=aviation-news/aviation-international-news/2010-08-27/epa-begins-ruling-process-phase-out-leaded-avgas>

Ziulkowski, Jonathon David (2011) "Collective Knowledge on Aviation Gasolines" *Perdue University Report/Thesis*

<http://docs.lib.purdue.edu/techdirproj/43/>

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