

## CENTRE FOR SCIENCE AND ENVIRONMENT

March 28, 2005

Dear Shri Mani Shankar Aiyar,

I am writing to express our deep concern over the use of methylcyclopentadienyl manganese tricarbonyl (MMT), a manganese based octane enhancer in petrol by the oil companies in India. It has been brought to our notice that some oil companies have begun to blend MMT in petrol as octane enhancer.

It has been well established that MMT forms manganese particles when it burns as a petrol additive. Manganese particles can be a potent neurotoxin, when inhaled. It is also understood that manganese deposits can damage the emission control system of vehicles including the catalytic converters in vehicles. As an octane enhancer, MMT is expected to save fuel. But in reality, as evidence shows, it barely makes any difference. But its use has dangerous repercussions. We need urgent regulatory intervention to stop the use of this toxic substance to protect public health.

We are extremely worried that the use of MMT has begun and is expected to grow, as refineries would want to use this low cost octane enhancer to have greater flexibility to meet the octane requirements while meeting the new norms of Euro III and Euro II.

In this context I would like to draw your attention to the following facts:

1. **Toxic risk:** There is mounting scientific evidence worldwide to show that MMT produce fine particles laden with manganese oxides, associated with phosphates and highly soluble sulphates. More soluble particles dissolve in the blood more readily, and are transported to brain more rapidly. They can enter the brain through the nasal passages without circulating in the blood first. The clearance rate of manganese from the brain is slower than the absorption rate. This essentially damages brains.
2. **Damages emissions control system:** Even global carmakers have stated that their engine is not designed to use fuel or fuel additives with metallic compounds, including manganese-based additives. Evidence provided by the global vehicle industry shows that MMT contaminates engine components and exhausts emission control system. This can lead to a significant increase in the emissions and lower fuel economy. Evidences from China show red manganese deposits on catalysts after 20,000 miles of use. Over a lifetime of a car gaseous emissions can increase dramatically -- hydrocarbons by as much as 118 percent, carbon monoxide 130 percent and, nitrogen oxides 143 percent. The investments on advanced catalyst technologies to meet the tighter emissions standards can be at serious risk if manganese plugs them so quickly. This will defeat the emissions control efforts.
3. **Developed world has almost stopped using MMT.** Its use is very sparse. Canada, the only major user of MMT has voluntarily reduced its use to such an extent that as much as 95 percent of the Canadian petrol is MMT free today. California has already banned manganese additives in 1976. The rest of the US does not allow MMT in reformulated gasoline. Nor do the oil majors of the US use it. New Zealand has also effectively banned by regulating its use. Germany has not given approval to its use. Japan does not use MMT. Oil majors in the US and Europe have stopped using MMT. Unfortunately, while the developed world is phasing out its use, MMT has

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begun to make inroads into Asia and Africa that have recently banned leaded petrol and do not have proper regulatory safeguards against toxic additives.

4. **We can easily do without MMT:** MMT is used as an octane enhancer in petrol. Specified octane rating helps vehicle engines to resist knock. **The current requirement of octane can be easily met without the use of these octane enhancers.** Review of literature shows that MMT can increase maximum of one octane number. In the US they have found that the actual cost of not using MMT is pittance -- less than half a percent of the retail petrol prices there. **The fuel economy loss of not using MMT is so meager and inexpensive that it does not justify the several times higher health cost associated with its use.**
5. **Ban its use before the MMT business grows:** India must not delay the decision to stop such toxic substance from coming into the fuel stream. Even countries like the US and Canada have found it difficult to fight the trade laws that govern such business in NAFTA countries. Oil companies must be proactive, precautionary and factor in environmental and public health considerations in their products for mass consumption.
6. **Need regulations for fuel additives that will screen them effectively for hazards.** We need to stop use of MMT. We need to make the producers and sellers of such substances liable and place the burden of proof on them to provide evidence that the substance will not cause adverse health effects. In Germany, the industry producing metallic additives has to prove that the new substance will not cause harm and the German federal environment agency defines the test to prove it.

It is important to take the decision today before the business of MMT grows and gets entrenched. There is enough evidence for us to be precautionary and take regulatory action at national level to prevent its use in the country.

You would recall the difficult and a prolonged process to rid tetraethyl lead from petrol for exactly the same reasons. Lead affected the nervous system, kidneys and the gastrointestinal system and at the same time damaged catalytic converters in vehicles. We are today facing a serious risk of replacing one problem with another. We must not endanger the pollution control efforts to bring in cleaner technologies and fuels in our country.

**I would greatly appreciate if we have your support in addressing this serious toxic threat to public health. We will be grateful for your personal intervention to prevent the use of this toxic chemical in petrol.**

In this context I would like to share with you the recent study done by the International Council of Clean Transportation (ICCT), a group of leading regulators and experts working to reduce pollution and energy waste from vehicles. This comprehensively highlights the key public health concerns and the scientific evidences on MMT.

We will be grateful if you are also able to spare some time and give us the opportunity to discuss this matter with you.

Yours' cordially

Anumita Roychowdhury

**CENTRE FOR SCIENCE AND ENVIRONMENT**

Associate Director  
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