From:	Department of Infrastructure, Transport, Regional Development, Communications and the Arts <infrastructure.noreply@govcms.gov.au> on behalf of infrastructure.noreply@govcms.gov.au
Sent:	Wednesday, 11 September 2024 10:06 AM
To:	CleanerCars
Subject:	submission to: Proposed New Vehicle Efficiency Standard (Exempt Vehicles) Determination 2024 [SEC=OFFICIAL]
Attachments:	image00001.png; oil_refinery_testing.pdf

Submitted on 11 September 2024

Submitted by: Anonymous

Submitted values are:

Step 1: Your submission

Remain Anonymous
No

Private Submission
No

Published name
Lubrication Solutions P/L

Short comment
XSNANO: Innovative Fuel Additive with Significant Emission Reduction Potential
We would like to reintroduce XSNANO, an advanced fuel additive that has demonstrated remarkable potential in significantly reducing emissions and enhancing fuel efficiency in both diesel and petrol engines.
Independent case studies conducted by reputable petrochemical companies have shown that XSNANO can reduce fuel emissions by an average of 40%, with reductions as high as 95% in some cases.
Over the past few years, we have engaged with various levels of government in Australia to discuss the importance of implementing stricter fuel efficiency standards and exploring viable solutions to reduce automotive emissions. While we understand the complexities involved, we are disappointed by the lack of progress in these discussions.
Despite this, we remain steadfast in our belief that addressing these challenges is critical for both environmental sustainability and economic efficiency. This is why we are bringing XSNANO to your attention once again.
Independent testing has demonstrated that this innovative additive can achieve the following:
Up to 95% reduction in harmful emissions, including particulate matter, NOx, and CO2.
Fuel economy improvements of up to 28%, resulting in significant cost savings.
These results highlight the considerable potential of XSNANO to mitigate the environmental impact of the transportation sector and support Australia's climate change objectives.
We recognize that the evaluation of emerging technologies requires a rigorous and transparent approach.
However, we are confident that XSNANO merits serious consideration due to its:
Extensive independent testing and validation by reputable institutions.
Ease of application, suitable for integration with existing infrastructure and vehicles.
Immediate impact potential on emissions reduction and fuel efficiency.
We are eager to engage in constructive dialogue with your team to explore how XSNANO can contribute to addressing Australia's emissions challenges. We believe this technology has the capacity to play a vital role in fostering a more sustainable future.

XSNANO is readily available and can be added to fuel at the refinery level or introduced to bulk tanks post-production at fuel stations. We look forward to the opportunity to discuss how XSNANO can be part of Australia's path towards a cleaner, more efficient transportation sector.

Upload attachments

File uploads

- image00001.png (692.21 KB)
- oil_refinery_testing.pdf (1.15 MB)

Step 2: Contact details

███████

███████

Organisation (if applicable)
Lubrication Solutions Pty Ltd

███

████████████

██████

Email notification
CleanerCars@infrastructure.gov.au

Consultation name
Proposed New Vehicle Efficiency Standard (Exempt Vehicles) Determination 2024

XSNANO Nanotechnology Fuel Additive
(NDA-288, NGA-288)
Petroleum Product Blending Case Analysis

Case Analysis Objectives

Nanjing Tengyi Petrochemical Co., Ltd. has tested the application of XSNANO fuel additive in petroleum product blending repeatedly. To improve its knock resistance, we have increased its octane rating; we've solved knockings and exhaust gas emission, as well as problems like incomplete combustion and carbon deposition at valve core.

Effects of XSNANO fuel additive

In conventional linear blending, blending methods like blending property control (BPC) and blending ratio control (BRC) are adopted. Arene, naphtha, BTX aromatics, MTBE and a certain proportion of MMT additives are used for the linear blending of gasoline. During the blending process, it has been found that this blending method has shortcomings such as uneven liquid phase dispersion affecting the homogeneity of the product, limited octane rating increase and colloid deposition and gradation. The long-term use of the oil products that are blended with the conventional blending can damage the three-way catalytic converters of vehicles, cause oxygen sensors to fail, corrode vehicle engine systems and exhaust systems, block oil ways and nozzles, cause deposit sediments, and colloid and carbon deposition in valves and cylinders until directly affecting the normal operation of gasoline engines. After using XSNANO fuel additive, we have adopted different methods for blending and have found:

1. The blending components are distributed evenly in phases
2. The increase of octane level is significant, and the proportion of additive is reduced
3. Among the emission indicators, the emission of nitrogen, oxygen, sulphur and heavy metal is reduced significantly.

Conclusions

After adding the XSNANO fuel additive, the knock resistance of the petroleum products improved significantly, with antiknock index up 4 to 6; the power also increased impressively, the rotating speed stability was excellent and petroleum product acidity and colloid were reduced largely. We have therefore summed up an effective linear blending solution with data storage management modules and task control modules.

Case Analysis

1. No additive:

Naphtha	BTX aromatics	MTBE	MMT
75	15	8	2

2. Adding additive

Add XSNANO nanometer fuel additive according to the proportion (1:20,000):

Naphtha	BTX aromatics	MTBE	MMT
80	13	5	1

3. Adding additive

Add XSNANO nanometer fuel additive according to a different proportion (1:10,000):

Naphtha	BTX aromatics	MTBE	MMT	Other
84	10	4	0.6	Increasing chroma

Physical and chemical properties of XSNANO nanometer fuel additive:

Appearance: transparent brown oil-based liquid

Solubility: Easily dispersed in the fuel

Corrosivity: Copper corrosion test according to the ASTM D130 method was conducted, and XSNANO fuel additive was introduced according to the 1:10,000 proportion.

Thermal stability:

Heating: Away from direct sunlight, heated to 85°C. There is no demulsification of the product despite the temperature being maintained at this level, or layering after being cooled to room temperature.

Freezing: Frozen at an ultra-low temperature freezer to minus 40°C. No floccule in 24 hours.

Specific weight: No significant change in weight of the petroleum product after the additive was added.

pH value: No change in pH value after adding the additive.

Toxic substance: No new toxic substance is found after adding the additive.

Physical and chemical properties: The physical and chemical indicators of the finished products with the additive are qualified.

The petroleum product met the required standards and specifications.

Analysis:

Octane rating is the most important indicator of the knock resistance of petroleum products. Octane rating, as a parameter that can directly reflect knock resistance, is a label of petroleum products. While knock resistance can directly reflect the combustion uniformity of petroleum products under certain combustion conditions. XSNANO fuel additive has adopted liquid phase nanotechnology, which wedges nanometer liquid into petroleum products with nanometer assembly technology. The molecules then improve the knock resistance of petroleum products during combustion.

XSNANO fuel additive has such unique functions as cleaning carbon deposition and eliminating periodic combustion differences. Moreover, it can reduce engine knockings significantly and thus reduce octane rating demand by 4 to 6. The minor knock before combustion can loosen and crush the carbon deposition on the wall of the combustor, enabling the engine to maintain/recover to operate on the designed optimal level. That can thus extend the useful life of the engine and reduce maintenance frequency and costs.
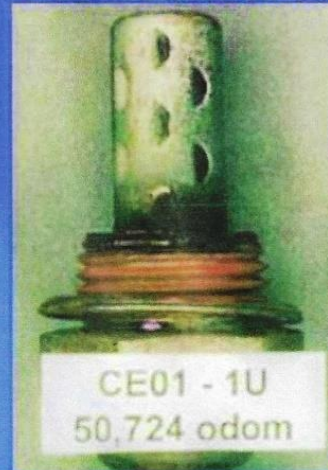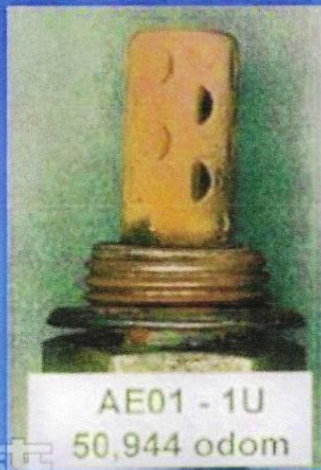
After testing the additive on dozens of vehicle models according to the national regulations on environmental protection testing, it can reduce exhaust emission by over 40%, and 95% at the highest level. In particular, it has a great effect on the "focus of environmental protection"- oxynitrides.

Test Program Observations continued
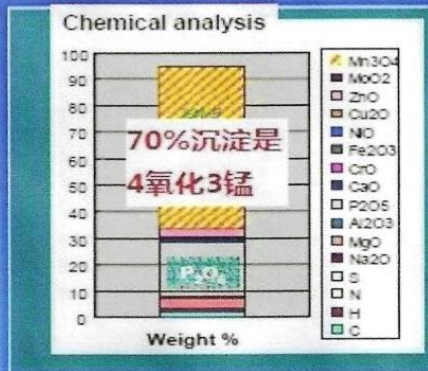
Typical Oxygen Sensor Deposits

MMT-Fuelled Vehicle

Clear-Fuelled Vehicle

AE01 - 1U
50,944 odom

CE01 - 1U
50,724 odom

21

Mechanism - Deposits

MMT Additive Combustion Process
$C_9H_7MnO_3$ + O_2 → Mn_3O_4 - melting point 1785℃ + CO_2 + H_2O

Chemical analysis

70%沉淀是
4氧化3锰

Weight %

- Mn3O4
- MoO2
- ZnO
- Cu2O
- NiO
- Fe2O3
- CrO
- CaO
- P2O5
- Al2O3
- MgO
- Na2O
- S
- N
- H
- C

400 CPSI Cat

Mn_3O_4 is a metal oxide - it adheres and accumulates on exhaust system components as a solid after combustion.
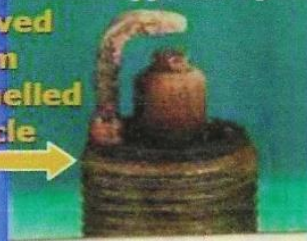
Valve Burning due To Exhaust leakage

31

Test Program Observations

Typical Spark Plug Deposits
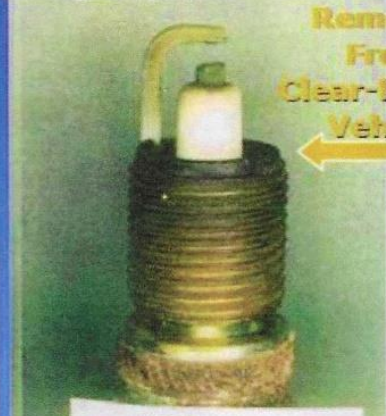
Removed From MMT-Fuelled Vehicle
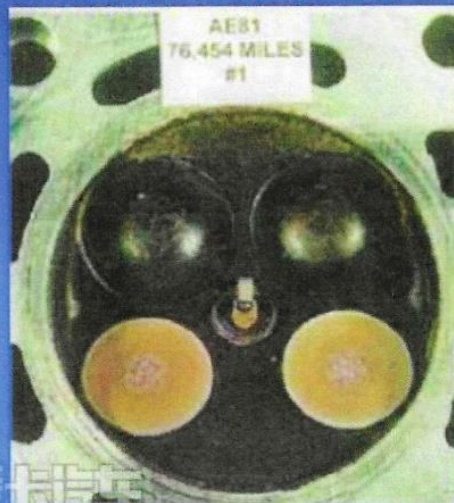
#4

51,068 Miles

AE61

Removed From Clear-Fuelled Vehicle

CE61-4
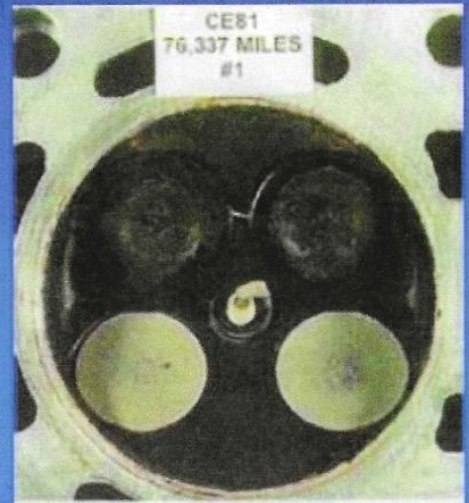51,181 mi

---

Test Program Observations continued

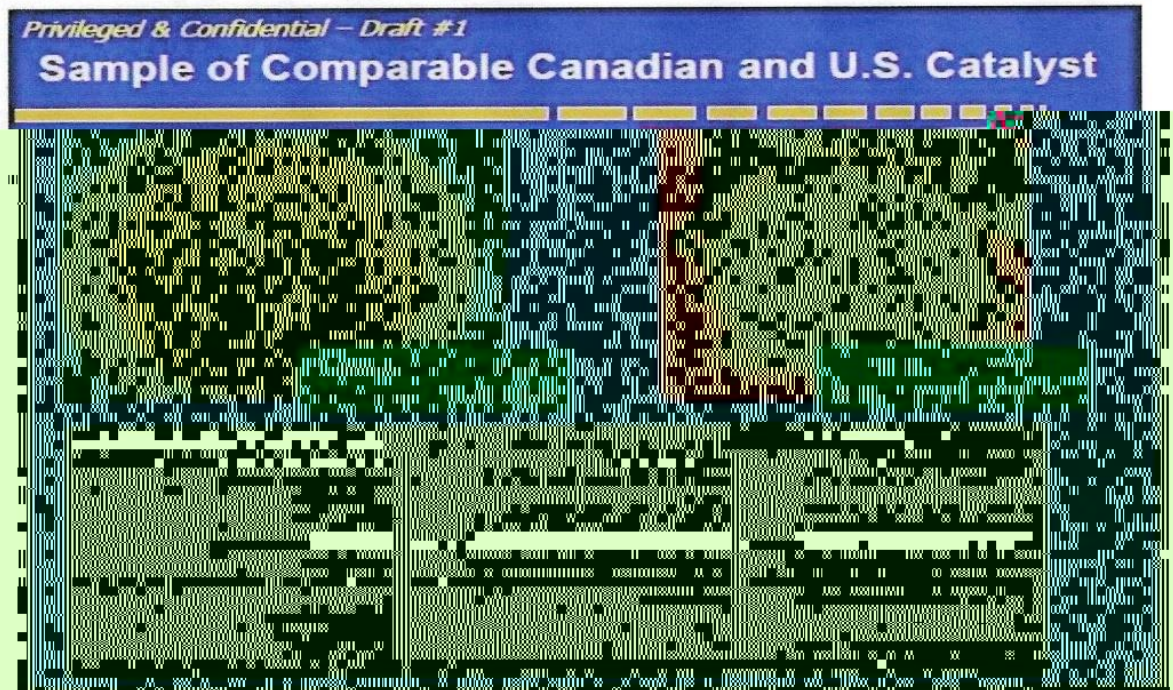### Typical Combustion Chamber Deposits

MMT-Fuelled Vehicle

AE81
76,454 MILES
#1

Clear-Fuelled Vehicle

CE81
76,337 MILES
#1

Hydrocarbon Emissions
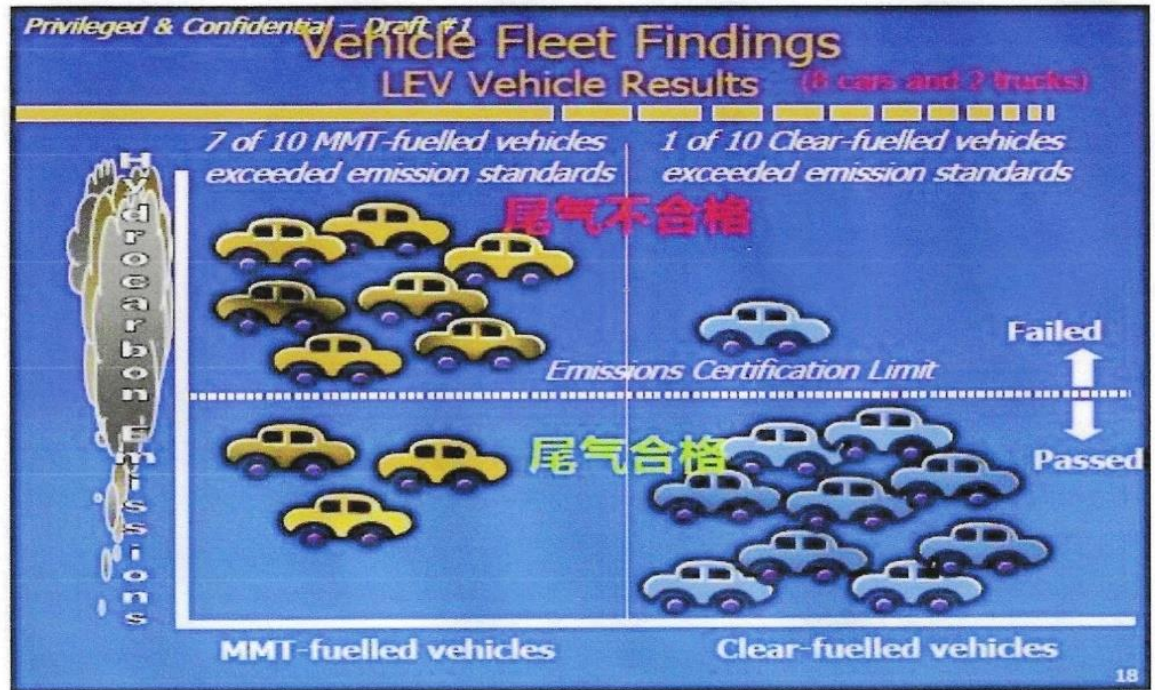
Sample of Comparable Canadian and U.S. Catalyst

Canadian Catalyst
Mileage 84,131 kms

U.S. Catalyst
Mileage 222,595 kms

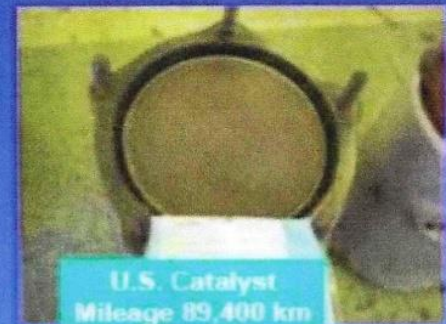|	
Model year:	2002 / 2001
Certification level:	ULEV
Catalyst Density (Cells/in2):	600
Close coupled (Yes/No):	Yes
Analysis of Deposit (Major Component):	Mn
Customer complaint:	MIL came on & low power

40

Sample of Comparable Canadian and U.S. Catalyst

Canadian Catalyst
Mileage 97,603 km

U.S. Catalyst
Mileage 89,400 km

Model year:	2002
Certification level:	ULEV
Catalyst Density (Cells/in2):	400
Close coupled (Yes/No):	Yes
Analysis of Deposit (Major Component):	Mn, O_2

42

Testing Data

BMW 730Li

Date	Mileage/KM	Rotation Rate (3000 + 50 r/min) / (g/km)			Rotation Rate (2000 r/min) / (g/km)			Rotation Rate (850 - 900 r/min) / (g/km)			States
		CO	HC	NOx	CO	HC	NOx	CO	HC	NOx	
23-03-15	32456	1.065	0.089	0.081	1.002	0.091	0.076	0.093	0.079	0.081	No Xsnano
14-04-15	33109	1.352	0.109	0.08	0.089	0.021	0.062	0.054	0.061	0.051	With XSNano
06-05-15	33850	0.066	0.083	0.079	0.061	0.074	0.054	0.055	0.063	0.008	With XSNano
26-05-15	34587	0.004	0.021	0.051	0.023	0.039	0.059	0.035	0.04	0.012	With XSNano
10-06-15	35331	0.002	0.017	0.053	0.021	0.033	0.052	0.035	0.037	0.017	With XSNano
Reduction %		99.81%	80.90%	34.57%	97.90%	63.74%	31.58%	62.37%	53.16%	79.91%	With XSNano

Das Auto Santana 2000

Date	Mileage/KM	Rotation Rate (3000 + 50 r/min) / (g/km)			Rotation Rate (2000 r/min) / (g/km)			Rotation Rate (850 - 900 r/min) / (g/km)			States
		CO	HC	NOx	CO	HC	NOx	CO	HC	NOx	
23-03-15	137323	5.405	0.189	0.231	3.991	0.163	0.201	3.2	0.181	0.179	No XSNano
12-04-15	137788	2.653	0.166	0.315	2.013	0.158	0.189	1.955	0.177	0.183	With XSNano
04-05-15	138321	1.397	0.137	0.121	1.113	0.16	0.091	1.083	0.149	0.089	With XSNano
26-05-15	138865	0.923	0.093	0.132	1.003	0.117	0.099	1.107	1.103	0.093	With XSNano
09-06-15	139398	0.891	0.094	0.109	1.001	0.079	0.093	0.881	0.067	0.073	With XSNano
Reduction %		83.52%	50.26%	52.61%	74.82%	51.53%	53.73%	71.76%	51.93%	59.22%	With XSNano

Kingcup Mini Bus

Date	Mileage/KM	Rotation Rate (3000 + 50 r/min) / (g/km)			Rotation Rate (2000 r/min) / (g/km)			Rotation Rate (850 - 900 r/min) / (g/km)			States
		CO	HC	NOx	CO	HC	NOx	CO	HC	NOx	
23-03-15	96533	1.63	0.17	0.15	1.24	0.14	0.11	1.02	0.23	0.102	No XSNano
10-04-15	97132	0.137	0.079	0.101	0.088	0.073	0.061	0.98	0.251	0.06	With XSNano
24-04-15	97781	0.082	0.041	0.081	0.094	0.039	0.068	1.2	0.137	0.09	With XSNano
11-05-15	98446	0.08	0.033	0.054	0.05	0.033	0.059	0.064	0.107	0.06	With XSNano
31-05-15	99793	0.061	0.03	0.053	0.079	0.034	0.054	0.054	0.06	0.06	With XSNano
Reduction %		95.30%	82.35%	64.67%	93.63%	75.71%	50.91%	92.16%	59.57%	41.18%	With XSNano