

## How can Industrial Regulations be improved to avoid any potential Emissions Reporting Scandal (Avoiding a VW type scandal)

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# Content

## VW automotive emissions scandal

- What was behind the Fraud?
- How could this happen?

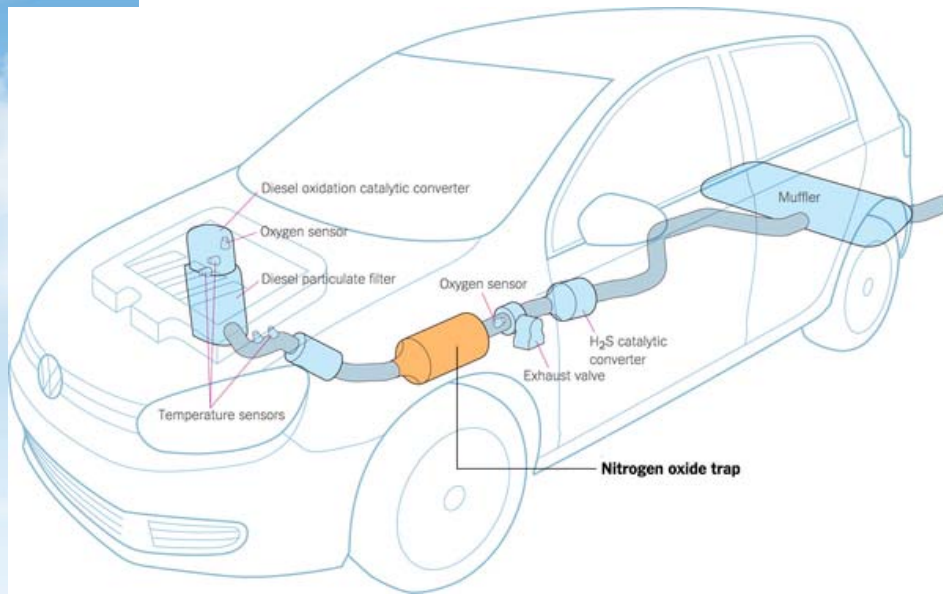
## Where could similar things happen in Industrial Emissions reporting?

- Mass reporting
- Emissions measurements

## Thoughts on areas to improve



# EMISSIONS SCANDAL



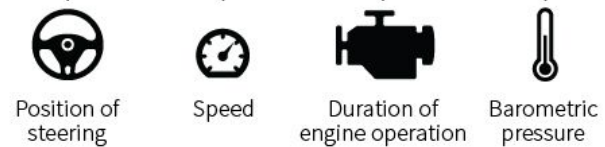
## How Volkswagen's defeat device works

### THE 'SWITCH' SOFTWARE



Software in the car's electronic control module (ECM) determines where the car is being driven (i.e. highway, road, testing) by analysing a series of factors.

### FACTORS ANALYSED



### MODE OF THE VEHICLE?

#### BEING TESTED



Mode switches to "dyno calibration," as software recognises vehicle is taking emission test.

#### RESULT



EPA compliant emission levels produced.

#### NORMAL OPERATION



Mode switches to "road calibration," as software recognises vehicle is in normal operation.

#### RESULT

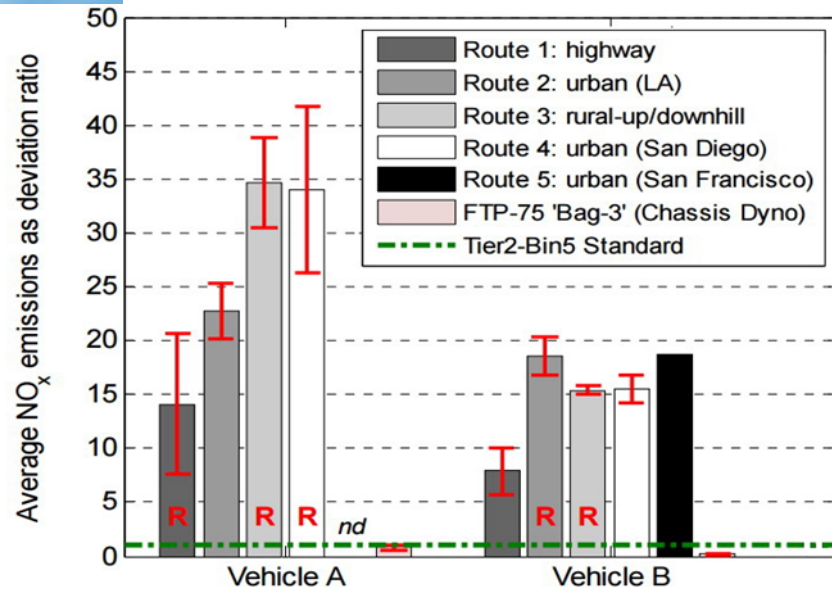


Effectiveness of emission control system reduced, increasing Nitrogen oxide levels to 10 to 40 times above standards.



# The results of misreporting

## Environmental



## Financial

### Volkswagen Stock One-Year Performance

Volkswagen stock had a bumpy 2014. From a high of \$53.93 hit on Jan. 13, it slid to a low of \$37.85 on Oct. 10. And while Volkswagen stock has recovered somewhat, it's still down 20.5% over the past 12 months.



Sources: Yahoo! Finance, Money Morning Staff Research



## How could this happen?

- Unrepresentative standards /regulations
  - ✓ Not measuring actual emissions during typical cycle of driving :
- Poor Environmental Culture
  - ✓ Pass the test rather than control/minimise emissions
  - ✓ Too great an influence of 'end user' on requirements (especially in Europe where lab test is still non demanding)
- Financial incentive to cheat
  - ✓ Fuel economy stats in US



## Could this happen in the industrial emissions world?



- Unrepresentative standards/norms
- Poor environmental culture
- Incentive to do the wrong thing



# Unlikely ---The risks are lower,

- ☁ Many independent plant operators
  - One organisations fraud has small effect on overall position
- ☁ More reliance of Continuous Monitoring in plant conditions
- ☁ Increasing momentum on quality and representativeness of measurement
  - Calibration standards (EN-14181)
  - ISO-17025
- ☁ Culture generally good (incentivised by schemes such as OMA)





## BUT ..... The elephants in the room

☁ Calculation,  
estimation and  
measurements

☁ The role of CEMS

☁ Certain guidance

☁ Resources

MARGULIES  
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# Financial incentive to cheat: Mass reporting

- Must develop a consistent approach on Global Green house reporting
  - ✓ US approach is to measure Green House gases
  - ✓ European approach is to use calculations based on inputs and emission factors as default position
    - ❖ Increasing problems for Biomass/mixed fuel processes



- Improving Mass reporting
  - ✓ Visibility to source of data
    - ❖ estimation,
    - ❖ Calculation,
    - ❖ concentration measurement x estimated flow rate,
    - ❖ Concentration measurement x measured flow rate
  - ✓ Visibility to uncertainty of measurement



# Environmental Culture: what are we signposting?

☁️ CEMs for 'New pollutants of concern' where each country takes different view on cost/benefit

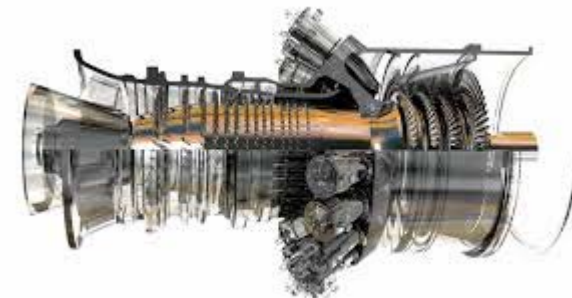
- Hg
- Dioxins
- Filter dust leak

☁️ Medium Plant Directive

- sign post of periodic tests even if arrestment plant

☁️ New standard for PEMS

- Applicability, Applicability





# Environmental culture: Unsatisfactory BREF process

☁ Industry (trade association) dominated and time consuming to influence

➤ Rarely 'the enlightened' view

☁ Monitoring BREF is 'technical guidance'

☁ Industry specific BREFS leaving gaps

➤ Choice of monitoring left to national regulators (who have decreasing technical and financial results)

☁ Insufficient resources and momentum

Code	Adopted/Published Document	Formal draft (*)	Monitoring report	Estimated review start (**)
CER	BREF (06.2007)			
CWW	BREF (02.2003)	FD (07.2014)	MR (06.2008)	
EPS	BREF (07.2006)			
ENE	BREF (02.2008)			
FMP	BREF (12.2001)			Review started
FDH	BREF (06.2006)		MR (10.2014)	
ICS	BREF (12.2001)			
IRPP	BREF (07.2003)	FD (06.2015)	MR (06.2009)	
IS	BATE (03.2012) BREF			



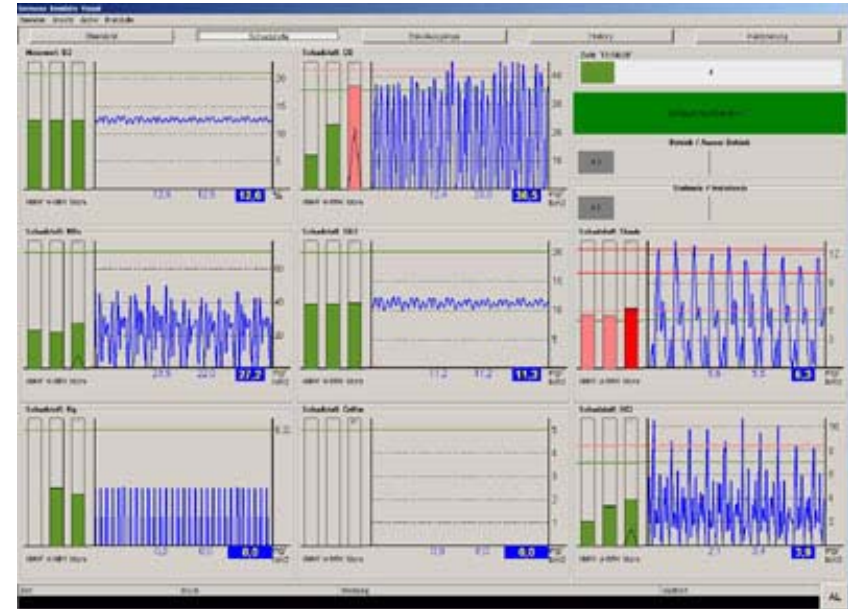
# Norms : Improving uncertainty with CEMs

## Standards

- Separate certification ranges (accuracy at low levels) and measurement/operating ranges (reliability at high levels)
- Shift in thinking to uncertainty at typical emissions vs emission limit (more relevance for Mass)
- Better visibility for Minimum detection levels of SRMs and CEMs
- Calibration ranges to cover full operating conditions of plant

## Responsibility

- Increased 'ownership' of quality of CEMS data by plant operator (Auditing or legal pressure like US)





## Ways forward?

- ☁ Visibility to source of data and uncertainty of measurement
  - ☁ Europe (Improved BREF process and guidance on types of Monitoring)
  - ☁ Evolve CEMs standards
- ☁ Low risk of a VW scenario , but there is  
**SOME**