



Manufacturers' Pollutant Release and Transfer Register Responsibilities

Experience of E-PRTR in a quarry



European Pollutant Release and Transfer Register

What ?

- European Community signed UNECE Protocol on Pollutant Release and Transfer Register and published in 2006 a Regulation establishing a European PRTR.
- 2007 first year of monitoring for quarries larger than 25 ha.
- First reporting: January 2008

How ?

Next actions



E-PRTR What to report ?

What ?

How ?

Next actions

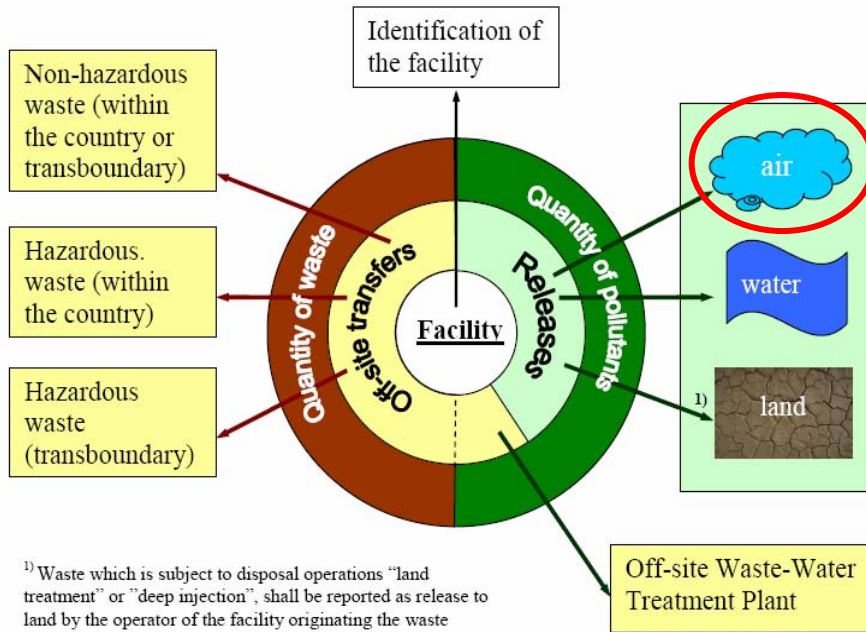


Figure 2: Overview on the reporting requirements for facilities under the E-PRTR



What to declare for vehicle exhaust emissions?

What ?

How ?

Next actions

Pollutant no			1	2	3	8	11	17	18	19	20	22	23	24	80	99
		Pollutant name	Methane (CH ₄)	Carbon monoxide (CO)	Carbon dioxide (CO ₂)	Nitrogen oxides (NO _x , NO ₂)	Sulphur oxides (SO _x , SO ₂)	Arsenic and compounds (as As)	Cadmium and compounds (as Cd)	Chromium and compounds (as Cr)	Copper and compounds (as Cu)	Nickel and compounds (as Ni)	Lead and compounds (as Pb)	Zinc and compounds (as Zn)	Chlorine and inorganic compounds (as HCl)	Particulate matter (PM ₁₀)
3	b	activity														
		Mineral industry														
	(a)	Underground mining and related operations	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	(b)	Opencast mining and quarrying	•	•	•	•	•	•	•	•	•	•	•	•	•	•

Emissions from vehicle exhaust considered to be 100% PM₁₀, CO, NO_x, SO_x and VOCs

Exhaust emissions of PM₁₀ already covered by emission factor of quarrying activities

How to evaluate vehicle exhaust emissions?

What ?

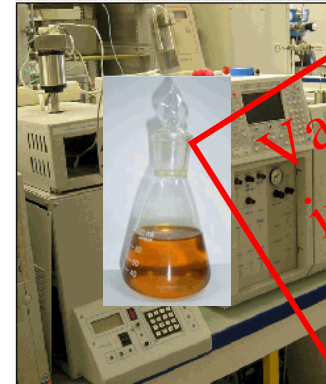
- Direct measurement in situ.



Difficult

How ?

- Calculation from fuel analysis.



Variable + no improvement visible

Next actions

- Exhaust emission factors.
 - Published EF (e.g. EPA)
 - Provided by Vehicle Manufacturer

Our choice

How to evaluate vehicle exhaust emissions?

What ?

- Exhaust emission factors.
 - Published EF (e.g. EPA):
 - Fixed by type of vehicle
 - Only possible improvement: total fuel consumed



Due to engine improvement

Due to quarry infrastructure improvement

How ?

Next actions

Table 4 Exhaust Emission Factors for Various Classes of Mining Equipment (kg/1000L fuel) ^{a,b}

	PM ₁₀ ^a	CO	NO _x	SO _x (as SO ₂)	VOCs (exhaust)	Emission Factor
Track type tractor	3.03	9.4	34.16	1.7	3.31	
Wheeled tractor	5.57	32.19	52.35	1.7	7.74	
Wheeled dozer	17.7	14.73	34.29	1.7	1.58	
Scraper	3.27	10.16	30.99	1.7	2.28	
Grader	2.66	6.55	30.41	1.7	1.53	
Off-highway truck	17.7	14.73	34.29	1.7	1.58	
Wheeled loader	3.51	11.79	38.5	1.7	5.17	
Track type loader	2.88	9.93	30.73	1.7	4.85	

Source: USEPA (1998).

How to evaluate vehicle exhaust emissions?

- Exhaust emission factors given by Vehicle Manufacturer one example !

What ?

EMISSIONS DATA [48W38044]
(48W38044)-ENGINE (8YG00772)-MACHINE

OCTOBER 03, 2007

For Help Desk Phone Numbers: [Click here](#)

Engine Emissions Data	
Emissions Definitions	
Serial Number	48W38044
Arrgmt Number	4P4988
Spec Number	2T4669
First Listed Certification	Not Certified
Has Engine Been Rerated?	No
Interlock Code Actual Progression	No In
As - Shipped Interlock Code	No In
As - Shipped Flash File	No FL
As - Shipped Flash File CRB	No FL
As - Shipped CORR FL Power	No Pc
Build Date	31Au

How ?

Engine Power (hp)	Model Years	Regulation	Emission Standards (g/hp-hr)					Year the Std Takes Effect	
			HC ^{a, d}	VHC ^b	NOx ^{a, d}	NMHC+NOx ^a	CO ^a		PM ^a
50 to <75	1998-2003	Tier 1			6.90			1998	
	2004-2007	Tier 2	0.40	0.3996	5.20	5.60	3.70	0.30	2004
	2008-2012	Tier 3	0.20	0.1998	3.3	3.50	3.70	°	2008
>75 to <100	1998-2003	Tier 1			6.90				1997
	2004-2007	Tier 2	0.40	0.3996	5.20	5.60	3.70	0.30	2003
	2008-2011	Tier 3	0.20	0.1998	3.3	3.50	3.70	°	2007
>100 to <175	1997-2002	Tier 1			6.90				1997
	2003-2005	Tier 2	0.40	0.3996	4.5	4.90	3.70	0.22	2003
	2007-2011	Tier 3	0.20	0.1998	2.8	3.00	3.70	°	2007
>175 to <300	1996-2002	Tier 1	1.00	0.9990	6.90		8.50	0.40	1996
	2003-2005	Tier 2	0.40	0.3996	4.5	4.90	2.60	0.15	2003
	2006-2010	Tier 3	0.20	0.1998	2.8	3.00	2.60	°	2006
>300 to <600	1996-2000	Tier 1	1.00	0.9990	6.90		8.50	0.40	1996
	2001-2005	Tier 2	0.30	0.2997	4.5	4.80	2.60	0.15	2001
	2006-2010	Tier 3	0.20	0.1998	2.8	3.00	2.60	°	2006
>600 to 750	1996-2001	Tier 1	1.00	0.9990	6.90		8.50	0.40	1996
	2002-2005	Tier 2	0.30	0.2997	4.5	4.80	2.60	0.15	2002
	2006-2010	Tier 3	0.20	0.1998	2.8	3.00	2.60	°	2006
>750 except generator sets	2000-2005	Tier 1	1.00	0.9990	6.90		8.50	0.40	2000
	2006-2010	Tier 2	0.30	0.2997	4.5	4.80	2.60	0.15	2006
Generator sets >750 to 1200	2000-2005	Tier 1	1.00	0.9990	6.90		8.50	0.40	2000
	2006-2010	Tier 2	0.30	0.2997	4.5	4.80	2.60	0.15	2006
Generator sets >1200	2000-2005	Tier 1	1.00	0.9990	6.90		8.50	0.40	2000
	2006-2010	Tier 2	0.30	0.2997	4.5	4.80	2.60	0.15	2006



Next actions

How to declare real pollutants release ?
This cut the ground from under my feet 7

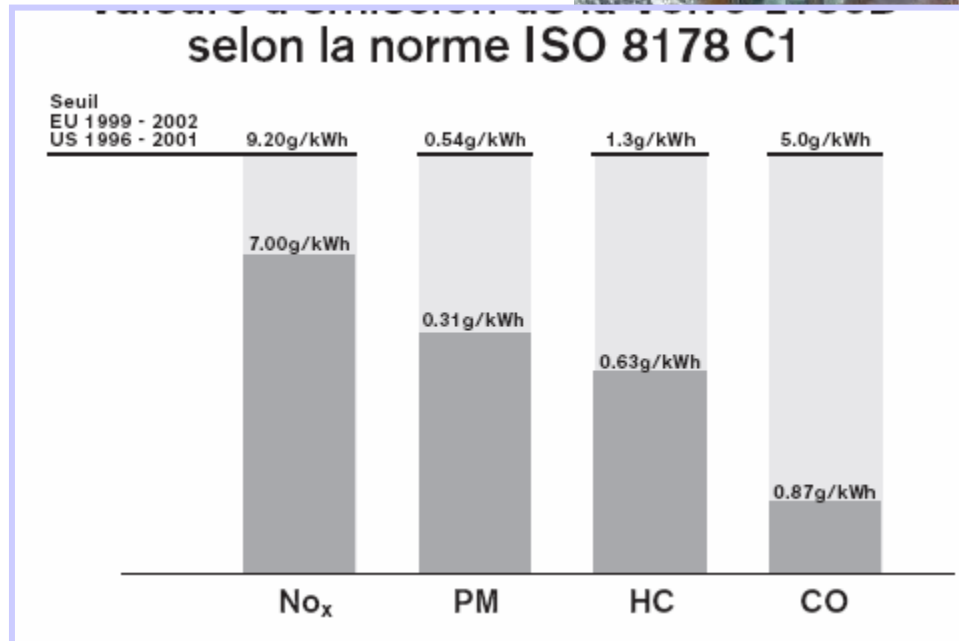
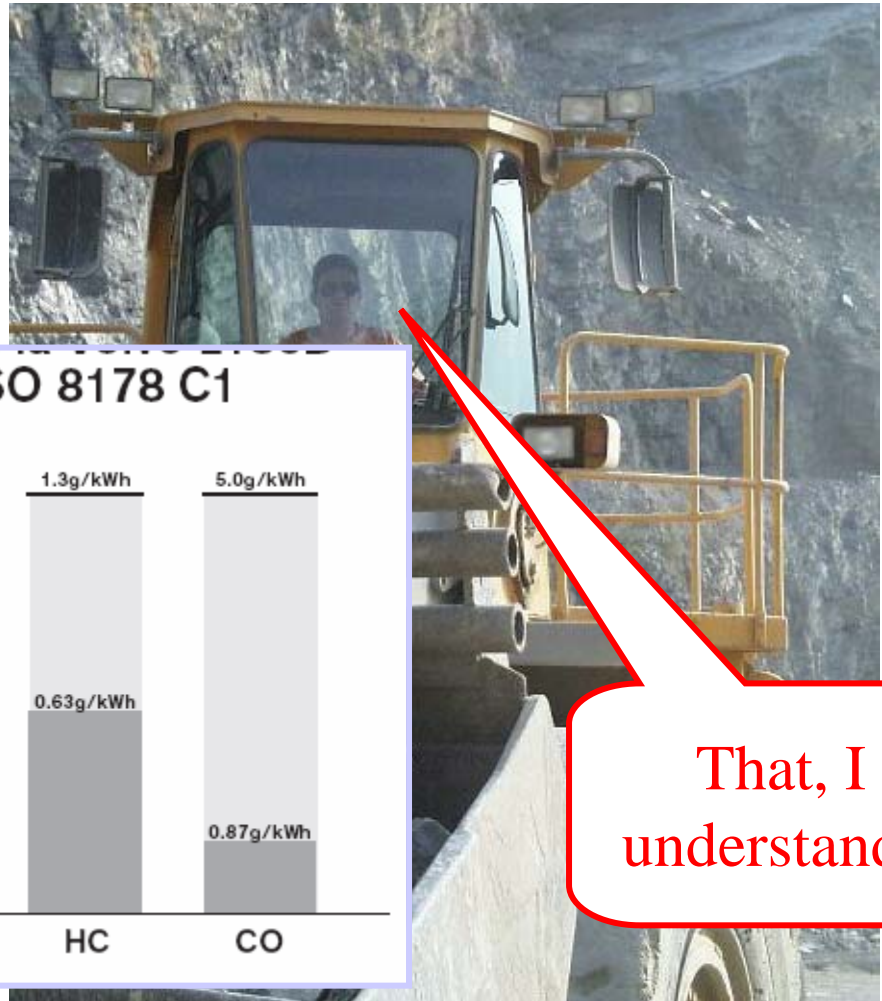
How to evaluate vehicle exhaust emissions?

- Exhaust emission factors given by Vehicle Manufacturer another example!

What ?

How ?

Next actions



That, I understand !

How to improve?

What ?

- Today quarrying means environmental report.
- To report aggregates producers need clear data from vehicle manufacturer

How ?

Quality of environmental data is now also part of the criteria to select equipment.



Next
actions

European Pollutant Release and Transfer Register

What ?

How ?

Next
actions



Thank you for your attention