

intersol'2017

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Management of contaminated sites in Italy and Europe

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ISPRA



JRC
EUROPEAN COMMISSION



MINISTERO DELL'AMBIENTE
E DELLA TUTELA DEL TERRITORIO E DEL MARE

- **Management of cont'd sites in Europe**
- **Management of cont'd sites in Italy**
- **Bottlenecks (photo slideshow)**
- **Conclusions**

Progress in management in Europe



Progress in management in Europe (2014)

- ☐ estimated **2.5 million** potentially contaminated sites in Europe, where soil contamination is **suspected** and detailed investigations are needed
- ☐ about **115 000** contaminated sites that have already been **identified** in Europe, nearly half of them (46%) have already been remediated.
- ☐ contaminated sites are mainly managed using **‘traditional’ techniques** such as excavation and off-site disposal, which together account for about **one third** of management practices.
- ☐ **mining activities, metal industries** and **gasoline stations** are the most frequently reported sources of soil and groundwater contamination. However, the range of polluting activities varies considerably **from country to country**.
- ☐ the most frequently occurring contaminants are **mineral oils** and **heavy metals**.

South-East Europe has huge sites (2013)

Country	Category	Ratio (m ² per site)	Ratio (ha per site)
Belgium (Wallonia)	Potentially contaminated sites identified ⁽¹⁾	21875	2.2
	Contaminated sites ⁽¹⁾	30000	3
Lithuania	Contaminated sites	215385	22
Poland	Potentially contaminated sites identified	708333	71
Romania	Contaminated sites	187668	19
Sweden	Potentially contaminated sites identified	5682	1
	Contaminated sites	1333	0.1
UK	Potentially contaminated sites estimated	10020	1

⁽¹⁾ Based on the numbers of contaminated and potentially contaminated sites of Wallonia and related areas identified by SPAQuE (respectively estimated numbers of 16,000 potentially contaminated sites and 6,000 contaminated sites)

Source: Ernst and Young 2013

Country	Public		Private	
	€m	%	€m	%
Austria	450	77	133	23
Belgium	383	34	743	66
Bulgaria	91	100	0	0
Cyprus	0	-	0	-
Czech Republic	145	75	48	25
Denmark	231	41	332	59
Estonia	6	87	1	13
Finland	90	32	190	68
France	936	25	2808	75
Germany	735	70	315	30
Greece	12	75	4	25
Hungary	317	75	106	25
Ireland	36	25	108	75
Italy	1184	41	1704	59
Latvia	3	75	1	25
Lithuania	7	90	1	10
Luxembourg	1	100	0	0
Malta	10	90	1	10
Netherlands	930	50	920	50
Poland	132	80	30	20
Portugal	0	0	25	100
Romania	28	60	20	40
Slovakia	41	50	41	50
Slovenia	1	90	0	10
Spain	7,5	10	77	90
Sweden	257	55	217	45
United Kingdom	449	25	1 295	75

Public/Private spending

**Source: Ernst and Young 2013,
data 2000-2005**

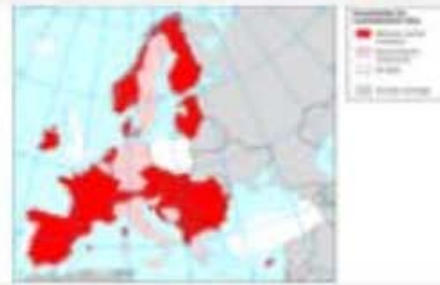
Other indicators of the situation (2014)



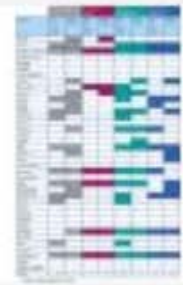
The European
Pollutant Release and



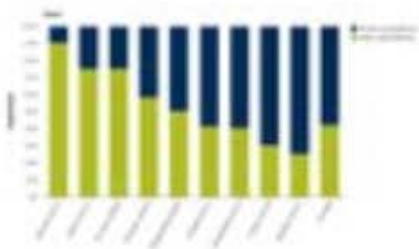
Funding mechanisms
for orphan sites



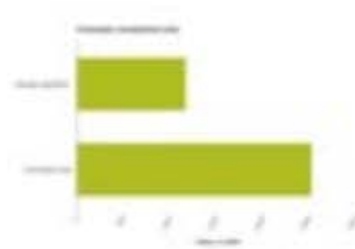
Inventories for
contaminated sites



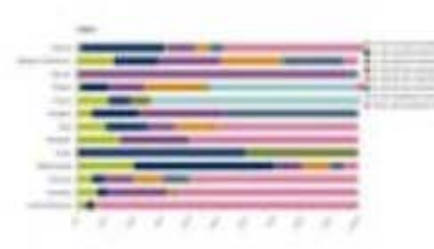
Progress per
management step



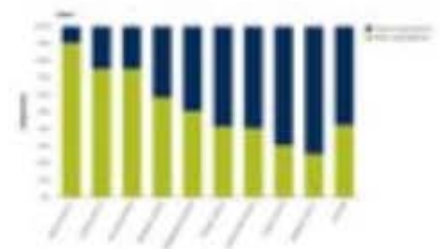
Estimated allocation
of public and private



Identified sites



Most frequently
applied remediation



Progress in
management of

Source: EEA **www.eea.europa.eu/data-and-maps**

New JRC questionnaire (RESULTS SOON)

- *Site status 1): in your country how many sites have been recorded (a) registered (b) estimated where **polluting activities** took place?*
- *Site status 2): How many sites are in **need of investigation**/still to be investigated or under investigation?*
- *Site status 3) how many sites have been **investigated but no remediation** is needed?*
- *Site status 4): How many sites **need** (1) or **might need remediation** (2) with risk-reduction measures (RRM) including natural attenuation? (Monitoring shall be part of the preparative investigations on how to remediate); (*) it can be estimation*
- *Site status 5): how many sites are **under/with on-going remediation** of risk reduction?*
- *Site status 6): how many sites have been **remediated** (with RRM completed) or under after-care measures ((i.e. sites that are monitored after remediation)? (Monitoring shall be performed to confirm that remediation and RRM goals are achieved).*

Progress in management in Italy



Main Site Investigation

Measured Concentration > CSC
(CSC = Screening Levels set by
DLgs 152/06 for soil and GW)

Potentially contaminated site

Site-Specific Risk Assessment
(Human Health)
SSTLs calculation (CSR)

Measured
Concentration < CSR

Monitoring Plan

Measured
Concentration > CSR

Contaminated site

Action Required to reduce
Risk (Clean-up, Exposure
Pathways Interruption)

Measured Concentration < CSC
(CSC = Screening Levels set by
DLgs 152/06 for soil and GW)

Site
NOT
CONTAMINATED

National Priority List sites (a.k.a. SIN)

- Generally speaking they are **large areas** with many site owners that are close each other and complex issues on:
 - Contamination responsibilities
 - Need of **coordinated approach** on remediation and monitoring
- Ministry of Environment is the legal entity, responsible for those sites

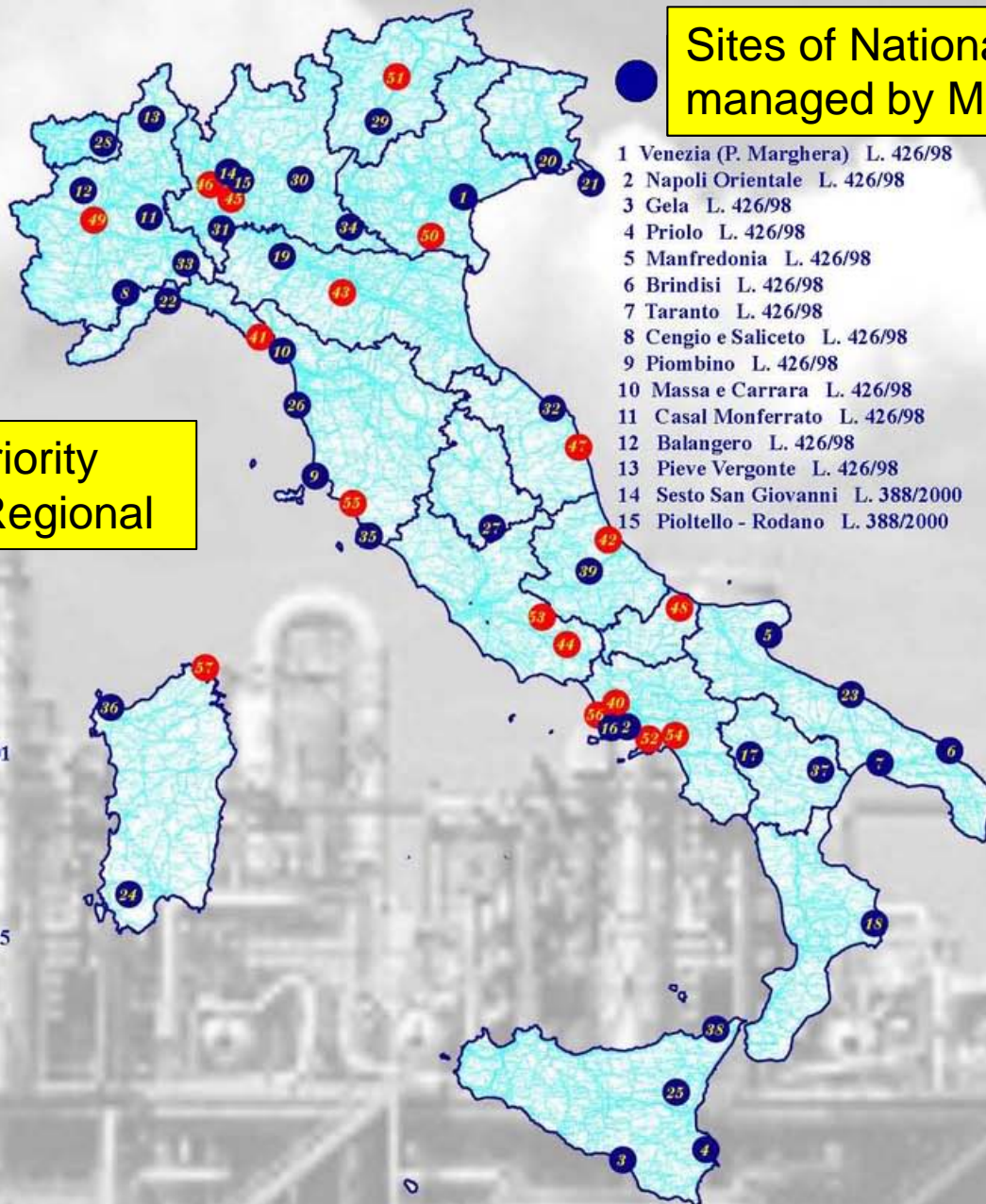




Ministerial Decree
11/01/2013 reduces
number of sites in NPL

Sites of National Priority List
managed by Min. Environment

Sites of National Priority
List till 2013, now Regional



- 40 Litorale Domizio Flegreo e A.A. L. 426/98
- 41 Pitelli L. 426/98
- 42 Fiumi Saline e Alento D.M. 468/2001
- 43 Sassuolo D.M. 468/2001
- 44 Frosinone D.M. 468/2001
- 45 Cerro al Lambro D.M. 468/2001
- 46 Milano - Bovisa D.M. 468/2001
- 47 Basso bacino del fiume Chienti D.M. 468/2001
- 48 Campobasso - Gugliesi II D.M. 468/2001
- 49 Basse di Stura (Torino) D.M. 468/2001
- 50 Mardimago - Ceregnano D.M. 468/2001
- 51 Bolzano D.M. 468/2001
- 52 Aree del Litorale Vesuviano L. 179/2002
- 53 Bacino del fiume Sacco L. 248/05
- 54 Bacino Idrografico del fiume Sarno L. 266/05
- 55 Strillaie D.Lgs. 152/06
- 56 Pianura D.M.Ambiente 11/04/08
- 57 La Maddalena

- 1 Venezia (P. Marghera) L. 426/98
- 2 Napoli Orientale L. 426/98
- 3 Gela L. 426/98
- 4 Priolo L. 426/98
- 5 Manfredonia L. 426/98
- 6 Brindisi L. 426/98
- 7 Taranto L. 426/98
- 8 Cengio e Saliceto L. 426/98
- 9 Piombino L. 426/98
- 10 Massa e Carrara L. 426/98
- 11 Casal Monferrato L. 426/98
- 12 Balangero L. 426/98
- 13 Pieve Vergonte L. 426/98
- 14 Sesto San Giovanni L. 388/2000
- 15 Pioltello - Rodano L. 388/2000
- 16 Napoli Bagnoli - Coroglio L. 388/2000
- 17 Tito D.M. 468/2001
- 18 Crotone - Cassano - Cerchiara D.M. 468/2001
- 19 Fidenza D.M. 468/2001
- 20 Laguna di Grado e Marano D.M. 468/2001
- 21 Trieste D.M. 468/2001
- 22 Cogoleto D.M. 468/2001
- 23 Bari D.M. 468/2001
- 24 Sulcis D.M. 468/2001
- 25 Biancavilla D.M. 468/2001
- 26 Livorno D.M. 468/2001
- 27 Terni D.M. 468/2001
- 28 Emarese D.M. 468/2001
- 29 Trento nord D.M. 468/2001
- 30 Brescia L. 179/2002
- 31 Broni L. 179/2002
- 32 Falconara Marittima L. 179/2002
- 33 Serravalle Scivia L. 179/2002
- 34 Laghi di Mantova L. 179/2002
- 35 Orbetello (area ex SITOCO) L. 179/2002
- 36 Porto Torres L. 179/2002
- 37 Val Basento L. 179/2002
- 38 Milazzo L. 266/05
- 39 Bussi sul Tirino D.M.Ambiente 28/05/08






Instruments for SIN management

- **“Preliminary Service Conference”** where all stakeholders (polluters, consultants, research institutes) are invited, listened.
- **“Decisional Service Conference”** where Min. of Environment, Min.Health, Min. Economic Development take decisions that are mandatory for polluters
- **“Program Agreement”** where different public authorities coordinate their activities for the realization of works or intervention programs.



Porto Marghera – soil (2016)






Total surface: 1621 ha

	Charact. plan approved	1558 ha
	Charact. plan finished	1488 ha
	Rem. project presented	1096 ha
	Rem. Project approved	990 ha
	Non cont. areas	228 ha



Porto Marghera – groundwater (2016)






Total surface: 1621 ha

	Charact. plan approved	1559 ha
	Charact. plan finished	1490 ha
	Rem. Project presented	1079 ha
	Rem. Project approved	1021 ha
	Non cont. areas	147 ha



Taranto – soil (2016)






Total surface: 4383 ha

	Charact. plan approved	1918 ha
	Charact. plan finished	1902 ha
	Rem. project presented	326 ha
	Rem. Project approved	321 ha
	Non cont. areas	344 ha



Taranto – groundwater (2016)

Total surface: 4383 ha

	Charact. plan approved	1918 ha
	Charact. plan finished	1902 ha
	Rem. Project presented	350 ha
	Rem. Project approved	348 ha
	Non cont. areas	307 ha



Progress in NPL Sites (2016)

City	SIN (a.k.a. Sites National Priority List)	Total Surface (ha)	Charact. Plan finished	Remediation project approved	Remediated or non contaminated areas
Brescia	Brescia – Caffaro	262	8%	1%	0%
Mantova	Laghi di Mantova e Polo chimico	1.028	60%	30%	1%
Trento	Trento nord	24	90%	46%	0%
Venice	Venezia (Porto Marghera)	1.621	92%	67%	9%
Trieste	Trieste	506	80%	5%	6%
Massa	Massa e Carrara	116	100%	15%	0%
Livorno	Livorno	206	100%	95%	0%
Terni	Terni - Papigno	655	94%	0%	2%
Neaples	Napoli Orientale	834	54%	20%	16%
Neaples	Napoli Bagnoli – Coroglio	249	94%	94%	0%
Bari	Bari - Fibronit	15	100%	75%	15%
Taranto	Taranto	4.383	43%	8%	7%
Brindisi	Brindisi	5.851	89%	16%	8%
Crotone	Crotone	868	53%	16%	11%

Regione	Anagrafe	Total sites in the inventory	Potentially con'd sites	Contaminated sites	Sites ongoing activities	Remediated/not con'd sites
Piemonte ^a	Sì	1435	256	469	814	245
Valle d'Aosta ^a	Sì	15	-	8	8	11
Liguria ^a	Sì	-	87	182	96	70
Lombardia ^a	Sì	-	1.771	940 (include SIN)	545	1.473
P.A. di Trento	Sì	-	107	48	24	194
P. A. di Bolzano - Bozen (solo per siti contaminati)	Sì	-	-	-	11	255
Veneto	Sì	-	-	-	-	-
Friuli-Venezia Giulia ^a	Sì	243	-	18	18	12
Emilia-Romagna ^a	No	-	-	-	-	-
Toscana ^a	Sì	2.826	548	430	180	307
Umbria ^a	Sì	123	44	64	64	12
Marche ^a	Sì	1581	171	285	215	410
Lazio ^{a1}	No	887	621	71	798	18
Abruzzo ^a	Sì	-	252	169	122	88
Molise ^{a1}	Sì	-	-	2	3	0
Campania	Sì	-	420	154	11	30
Puglia ^a	Sì	643	158	198	176	4
Basilicata ^{a1}	No	-	316	6	190	3
Calabria ^{a1}	Sì	696	104	44	12	9
Sicilia ^{a1}	Sì	642	45	-	347	0
Sardegna ^{a1}	Sì	574	403	171	100	5
TOTALE	-	9.665	5303	2319	3.734	3146

Fonte: Elaborazione ISPRA su dati APPA/ARPA

Legenda:

^a Non include SIN

¹ Dato aggiornato al 2012

* Includono siti con interventi di messa in sicurezza e/o bonifica avviati

Other “local sites”

- Both “service conferences” are under the responsibilities of Regions, that may delegate the Municipality
- The control over the remediation activities is up to the Provinces that may delegate, or may cooperate with ARPA (Regional Environment Protection Agency)



Main drivers for remediation

- *Industrial demand (development)*
- *Accidental contamination*
- *Change of use - Real estate market*
 - *Residential*
 - *Parking*
 - *Infrastructures*
- *Demand from public bodies*
 - *Groundwater protection policy*
 - *Soil protection policy*
 - *Health protection policy*
 - *Ecosysems protection policy*



If the landowner does not proceed with the remediation?

If the landowner does not proceed with the remediation intervention, the Local Public Administration (local Government) can act on own motion:

- ☐ **distraints** the land,
- ☐ **performs** the remediation,
- ☐ **sells** the land after the intervention,
- ☐ **keeps the amount** of the costs for remediation
- ☐ **gives back**, to the landowner, the remaining amount, **if any**.



The landowner may sustain the loss of the land and a potentially serious patrimonial damage.

Bottlenecks (photo slideshow)



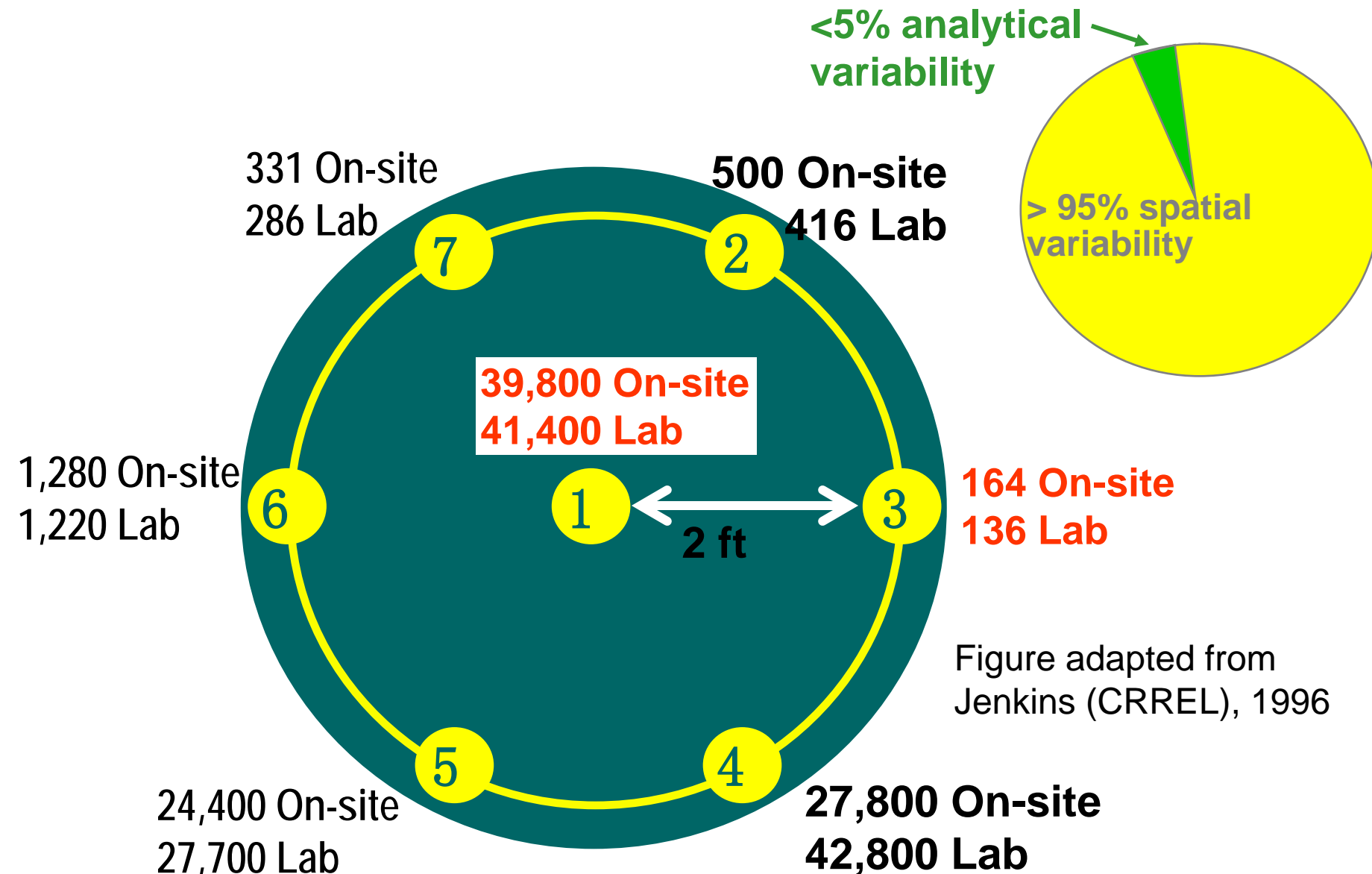
Once, it was allowed!





**We didn't
know that
some
materials were
dangerous**

Is the CSM representative? Often NO...




Some models overestimate risks...



Should we drink that GW below a contaminated site? Better a RBWM!



Conclusions

- New JRC **questionnaire** on “Progress in Management” have been released, soon we would get the results (**3 April 2017**)
- **Big areas** still to be investigated, assessed, remediated, monitored in south east Europe (**Balkans**), mainly they are in charge of public authorities
- In Italy, site investigation is at **good point**, the bigger part of cont'sites is the phase of risk assessment...then **remediation** will follow
-  and  are ideal for taking contact with Italian and South-European stakeholders like , free entrance, www.remtechexpo.com/en/

Thanks for your attention!

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