Environment and Health of Oil Refinery: A Case Study in Sardinia (Italy)

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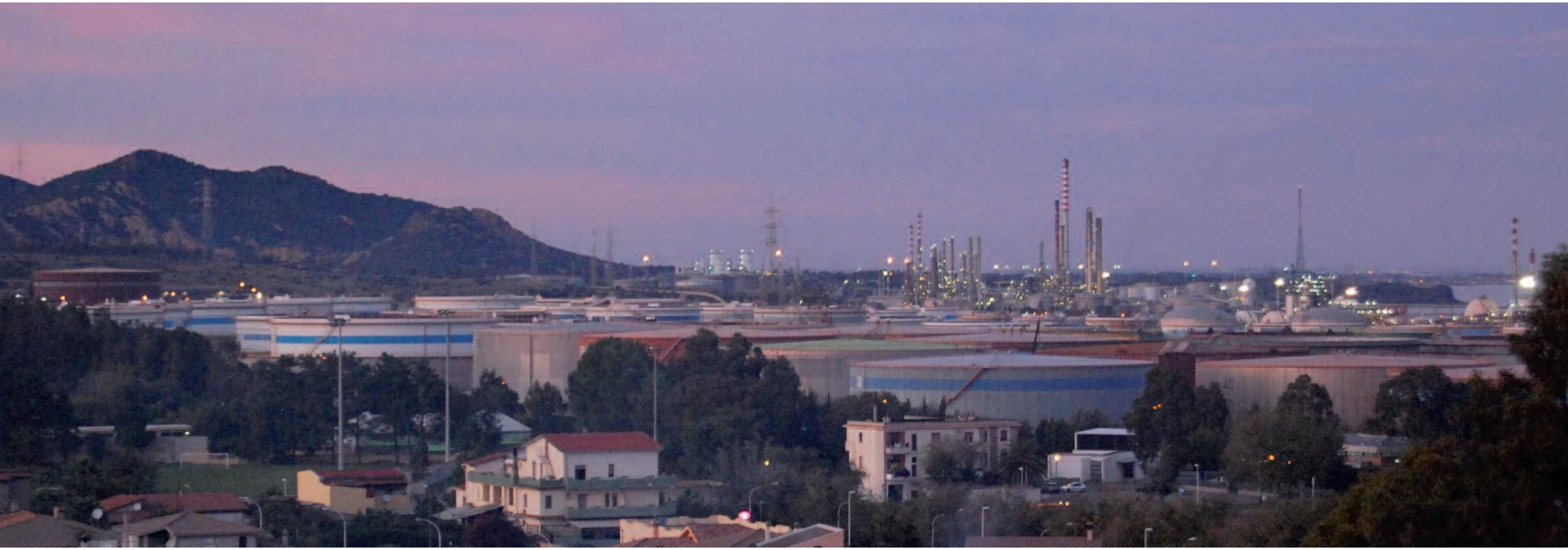


The second largest european supersite is strategically located in the Sardinia island, in a woderful gulf in the center of Mediterranean sea

Key points

1. What health effects/concerns have been associated with fossil fuel processing?
2. What are estimates of the size(s) of exposed population(s)? Are there vulnerable populations? What is the level of risk (if known)?
3. What approaches can be used to minimize public health impacts related to air quality emissions from fossil fuel processing?
4. What are the key knowledge gaps?

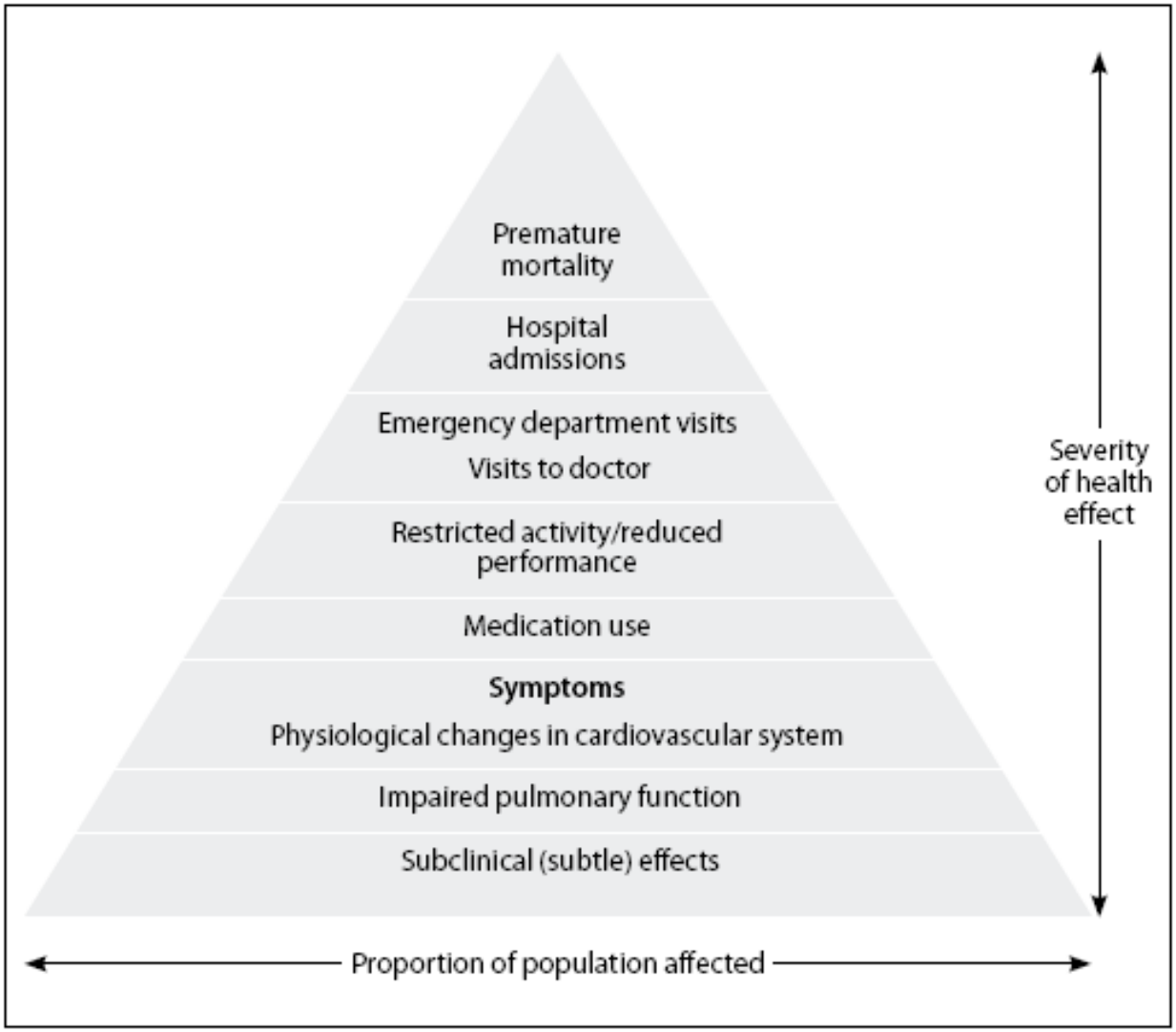
1. What health effects/concerns have been associated with fossil fuel processing?

- Fossil fuel extraction, processing and usage are characterized by different exposures and different ways of exposure — short-range and long-range—, and some partially known.

- **Short-term and long-term health effects** are well recognized among occupational and environmentally exposed populations, but for new industrial processes epidemiological data are not yet available.

- Toxicants are known, some only partially .

Fig. 1. Pyramid of health effects associated with air pollution



Source: American Thoracic Society *(6)*.

WHO Air Quality Guidelines 2005

WHO REVIHAAP Report 2013

Since the Air Quality Guidelines 2005, many new studies were published.

1. Further support for short-term effects of PM2.5 on mortality / morbidity
2. Further support for long-term effects of PM2.5 on mortality / morbidity
3. A major review of the evidence for **cardiovascular effects**, concluded that long-term exposure to PM2.5 are a cause of mortality and morbidity
4. Significantly more insight gained into physiological effects and biological mechanisms linking short- / long-term PM2.5 with mortality / morbidity
5. Additional studies linking long-term exposure to PM2.5 to several new health outcomes including atherosclerosis, **adverse birth outcomes** and childhood respiratory disease.
6. Emerging evidence also suggests possible links between long-term PM2.5 exposure and **neurodevelopment and cognitive function** as well as other chronic disease conditions such as diabetes.

Data quality: good *** ... poor * nil °	Indoor and common occupational sources for personal air pollution exposure [in addition to tobacco]	Significance for the highest individual exposures	Contribution for population air pollution exposure (%)			% of popul exposure influenced by ambient policy	Popul exposure reduction from 10 µg/m³ ambient reduction
			indoor & occup origin	commuting exposures	ambient air origin		
$PM_{2.5}$ *** $PM_{10-2.5}$ °	solid fuel combustion, candles	dominant	20...50 ...80	...35 ...50	40...70 ...25	50...80 ...40	6...8 µg/m³ 2...3 µg/m³
O_3 **	ozonators, electrostatic air cleaners, laser printers	rare or weak	nil	nil	ca. 100	100	3...6 µg/m³
NO_2 **	unvented gas appliances	significant	...50	...20	40...90	50...100	7...9 µg/m³
CO **	unvented, faulty and/or inproperly operated combustion equipment	dominant	some	some	...90	...90	10 µg/m³
SO_2 °	residential coal burning, paraffin heaters & lamps	rare but dominant	nil	nil	...100	...100	4...7µg/m³
C_6H_6 ***	Attached garages and solvents in some domestic chemicals	dominant	...50	...25	...80	50...90	...10 µg/m³
BaP * Naphth**	solid fuel combustion - naphthalene also in mothballs and coal tar based waterproofing	dominant rare but dominant	small 40...70	small small	...100 30...60	...100 30...60	6...8 µg/m³ < 10 µg/m³
As°, Cd°, Ni°, Pb*	some old paints & accumulated dust	some	...40	nil	...90	60...90	see $PM_{2.5}$
Hg°	breaking thermometers and fluorescent tubes, amalgam fillings	high	...65	nil	< 100	< 100	< 10 µg/m³

McKenzie LM, et al, Human health risk assessment of air emissions from development of unconventional natural gas resources, Sci Total Environ (2012), doi:10.1016/j.scitotenv.2012.02.018

Table 3
Chronic and subchronic reference concentrations, critical effects, and major effects for hydrocarbons in quantitative risk assessment.

Hydrocarbon	Chronic		Subchronic		Critical effect/ target organ	Other effects
	RfC ($\mu g/m^3$)	Source	RfC ($\mu g/m^3$)	Source		
1,2,3-Trimethylbenzene	5.00E+00	PPTRV	5.00E+01	PPTRV	Neurological	Respiratory, hematological
1,3,5-Trimethylbenzene	6.00E+00	PPTRV	1.00E+01	PPTRV	Neurological	Hematological
Isopropylbenzene	4.00E+02	IRIS	9.00E+01	HEAST	Renal	Neurological, respiratory
n-Hexane	7.00E+02	IRIS	2.00E+03	PPTRV	Neurological	–
n-Nonane	2.00E+02	PPTRV	2.00E+03	PPTRV	Neurological	Respiratory
n-Pentane	1.00E+03	PPTRV	1.00E+04	PPTRV	Neurological	–
Styrene	1.00E+03	IRIS	3.00E+03	HEAST	Neurological	–
Toluene	5.00E+03	IRIS	5.00E+03	PPTRV	Neurological	Developmental, respiratory
Xylenes, total	1.00E+02	IRIS	4.00E+02	PPTRV	Neurological	Developmental, respiratory
n-propylbenzene	1.00E+03	PPTRV	1.00E+03	Chronic RfC PPTRV	Developmental	Neurological
1,2,4-Trimethylbenzene	7.00E+00	PPTRV	7.00E+01	PPTRV	Decrease in blood clotting time	Neurological, respiratory
1,3-Butadiene	2.00E+00	IRIS	2.00E+00	Chronic RfC IRIS	Reproductive	Neurological, respiratory
Propylene	3.00E+03	CalEPA	1.00E+03	Chronic RfC CalEPA	Respiratory	–
Benzene	3.00E+01	ATSDR	8.00E+01	PPTRV	Decreased lymphocyte count	Neurological, developmental, reproductive
Ethylbenzene	1.00E+03	ATSDR	9.00E+03	PPTRV	Auditory	Neurological, respiratory, renal
Cyclohexane	6.00E+03	IRIS	1.80E+04	PPTRV	Developmental	Neurological
Methylcyclohexane	3.00E+03	HEAST	3.00E+03	HEAST	Renal	–
Aliphatic hydrocarbons C_5–C_8[a]	6E+02	PPTRV	2.7E+04	PPTRV	Neurological	–
Aliphatic hydrocarbons C_9–C_{18}	1E+02	PPTRV	1E+02	PPTRV	Respiratory	–
Aromatic hydrocarbons C_9–C_{18}[b]	1E+02	PPTRV	1E+03	PPRTV	Decreased maternal body weight	Respiratory

BD. Goldstein et al. Missing from the Table: Role of the Environmental Public Health Community in Governmental Advisory Commissions Related to Marcellus Shale Drilling. Environ Health Perspect 120:483–486 (2012). http://dx.doi.org/10.1289/ehp.1104594

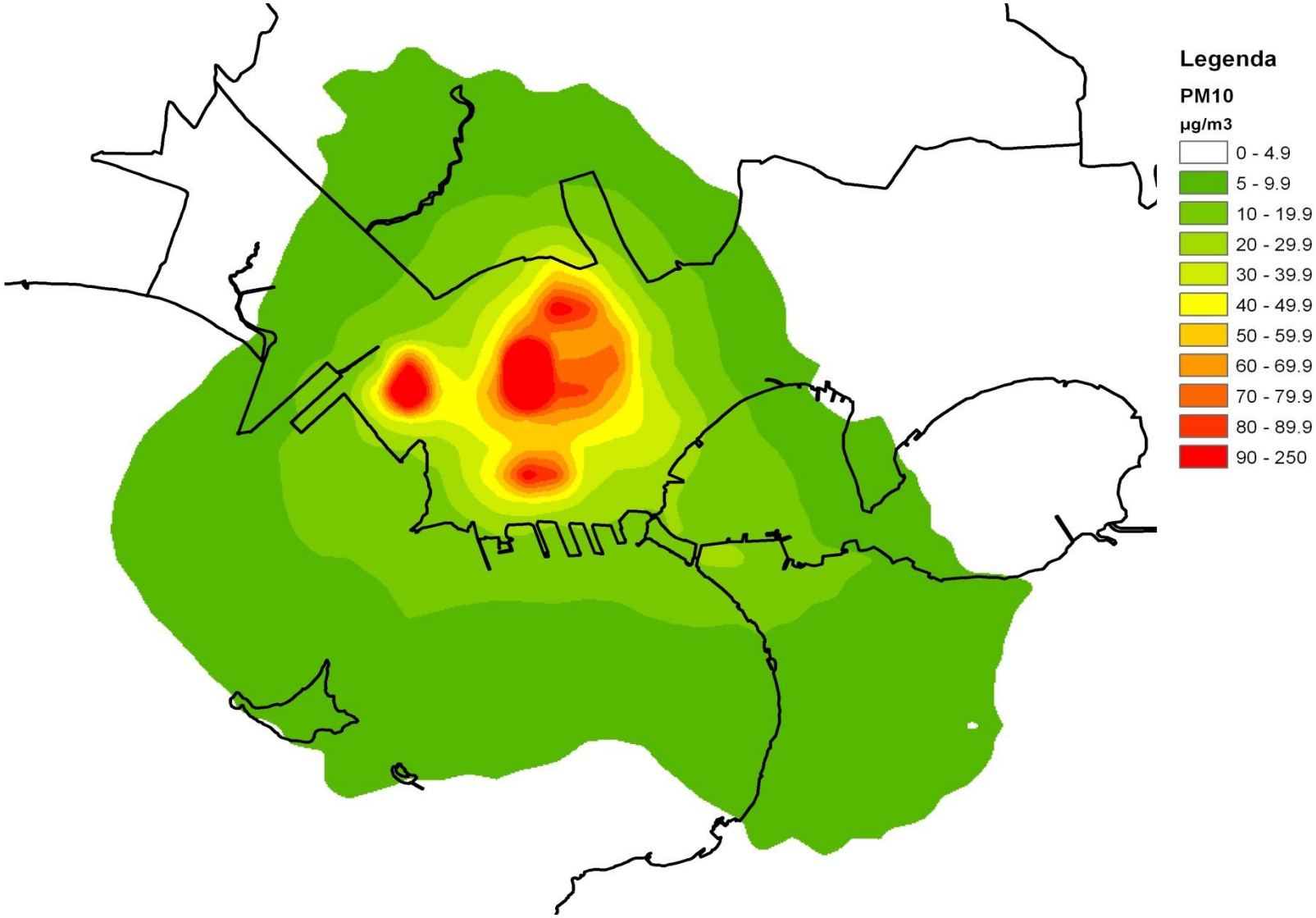
Table 1. Concerns raised by opponents (n = 59) of Marcellus Shale drilling at the Washington, Pennsylvania, public meeting with the SEAB Natural Gas Subcommittee.

Concern	n (%)
Environmental concerns	46 (78.0)
Safety and regulation of industry	41 (69.5)
Negative effects on water	39 (66.1)
General health concerns	37 (62.7)
Negative effects on air	23 (39.0)
Chemicals in water	22 (37.3)
Bias, conflict of interest, or lack of expertise in desired subject area by members of the committee	14 (23.7)
Health problem in family member attributed to drilling	12 (20.3)
Personal legal rights have been infringed upon by companies	8 (13.6)
Export of domestic natural gas resources	6 (10.2)
Depreciation in property values	4 (6.8)

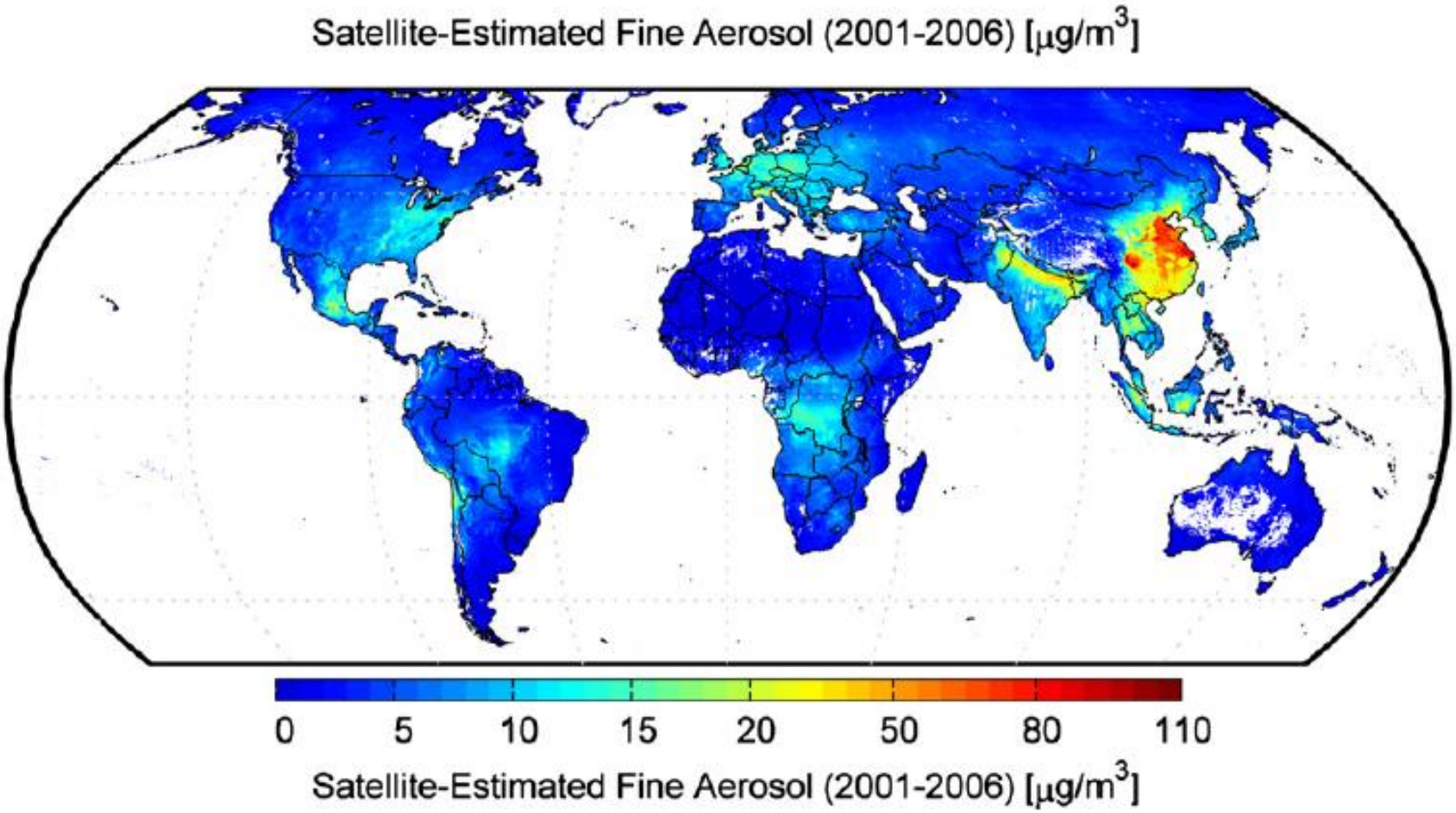
2. What are estimates of the sizes of exposed populations? Are there vulnerable populations? What is the level of risk (if known)?

- Short-range vs long-range pollution, global climate change.
- Small communities, low socio-economic groups and environmental justice issues.
- Dose-response functions are partially known. Ecological studies, communities surveys and convenient samples are common in more uncertain cases.

PM_{10} concentration modelling form an industrial source (Taranto, IT)



Gariazzo C et al. Application of a Lagrangian particle model to assess the impact of harbour, industrial and urban activities on air quality in the Taranto area, Italy. Atmospheric Environment 2007;41:6432-44.

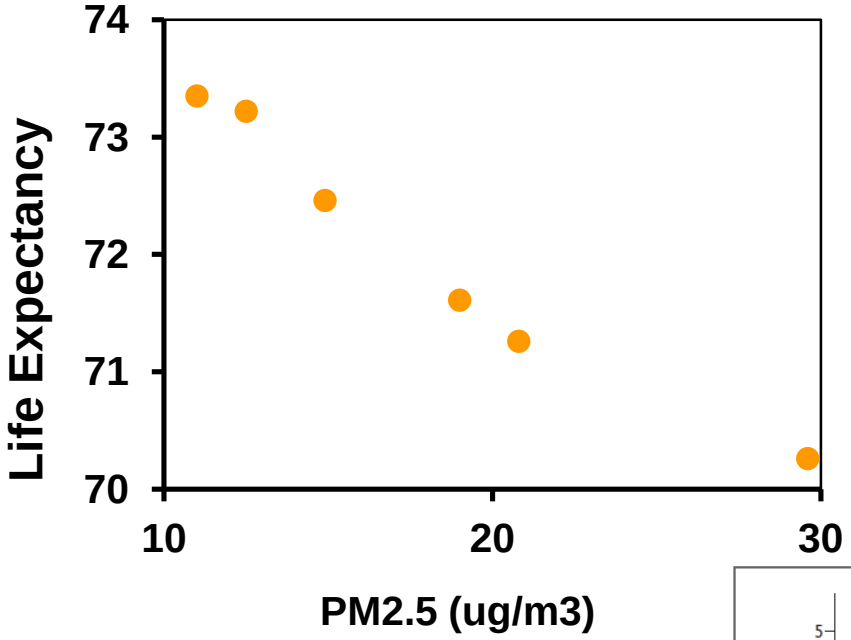


J. Evans et al. Estimates of global mortality attributable to particulate air pollution using satellite imagery. Environmental Research 120 (2013) 33–42

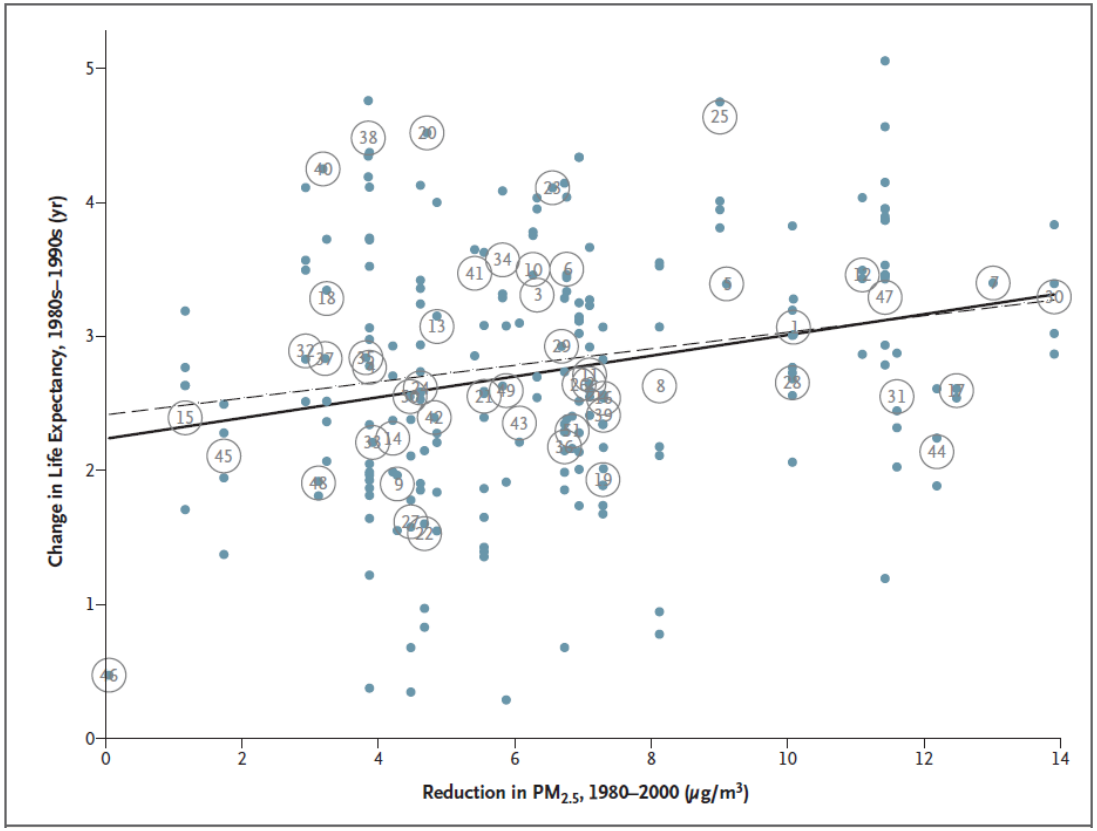
LM. McKenzie et al. Birth Outcomes and Maternal Residential Proximity to Natural Gas Development in Rural Colorado. Advance Publication: 28 January 2014. Environ Hlth Perspect http://dx.doi.org/10.1289/ehp.1306722

Table 2. Association between inverse distance weighted well count within ten-mile radius of maternal residen tube defects, and oral clefts.

Inverse Distance Weighted Well Count[a]	**0 Wells within 10 Miles**	**Low**	**Medium**	**High**
Live Births (N)	66,626	19,214	19.209	19,793
CHDs				
Cases (N)	887	281	300	355
Crude OR	1	1.1	1.2	1.3
Adjusted OR (95% CI)[b]		1.1 (0.93, 1.3)	1.2 (1.0, 1.3)	1.3 (1.2, 1.5)
NTDs				
Cases (N)	27	6	7	19
Crude OR	1	0.77	0.90	2.4
Adjusted OR (95% CI)[c]		0.65 (0.25, 1.7)	0.80 (0.34, 1.9)	2.0 (1.0, 3.9)
Oral Clefts				
Cases (N)	139	31	41	40
Crude OR	1	0.77	1	0.97
Adjusted OR (95% CI)[b]		0.65 (0.43, 0.98)	0.89 (0.61, 1.3)	0.82 (0.55, 1.2)



Risk estimates
Left: six cities study (courtesy of J Schwartz)



Pope A et al. Fine-Particulate Air Pollution and Life Expectancy in the United States. N Engl J Med 2009;360:376-86.

Table 2. Adjusted Mortality Relative Risk (RR) Associated With a 10-μg/m^3 Change in Fine Particles Measuring Less Than 2.5 μm in Diameter

	Adjusted RR (95% CI)*		
Cause of Mortality	1979-1983	1999-2000	Average
All-cause	1.04 (1.01-1.08)	1.06 (1.02-1.10)	1.06 (1.02-1.11)
Cardiopulmonary	1.06 (1.02-1.10)	1.08 (1.02-1.14)	1.09 (1.03-1.16)
Lung cancer	1.08 (1.01-1.16)	1.13 (1.04-1.22)	1.14 (1.04-1.23)
All other cause	1.01 (0.97-1.05)	1.01 (0.97-1.06)	1.01 (0.95-1.06)

Pope et al. JAMA 2002

	One-pollutant model	Two-pollutant model	Number of cohorts
$PM_{2.5}$			
Adjusted for NO_2*	1·07 (1·01–1·13)	1·06 (0·98–1·15)	14
Adjusted for PM_{coarse}†	1·08 (1·02–1·14)	1·07 (1·01–1·14)	16

Beelen R et al. ESCAPE Project. Lancet 2014; 383: 785–95

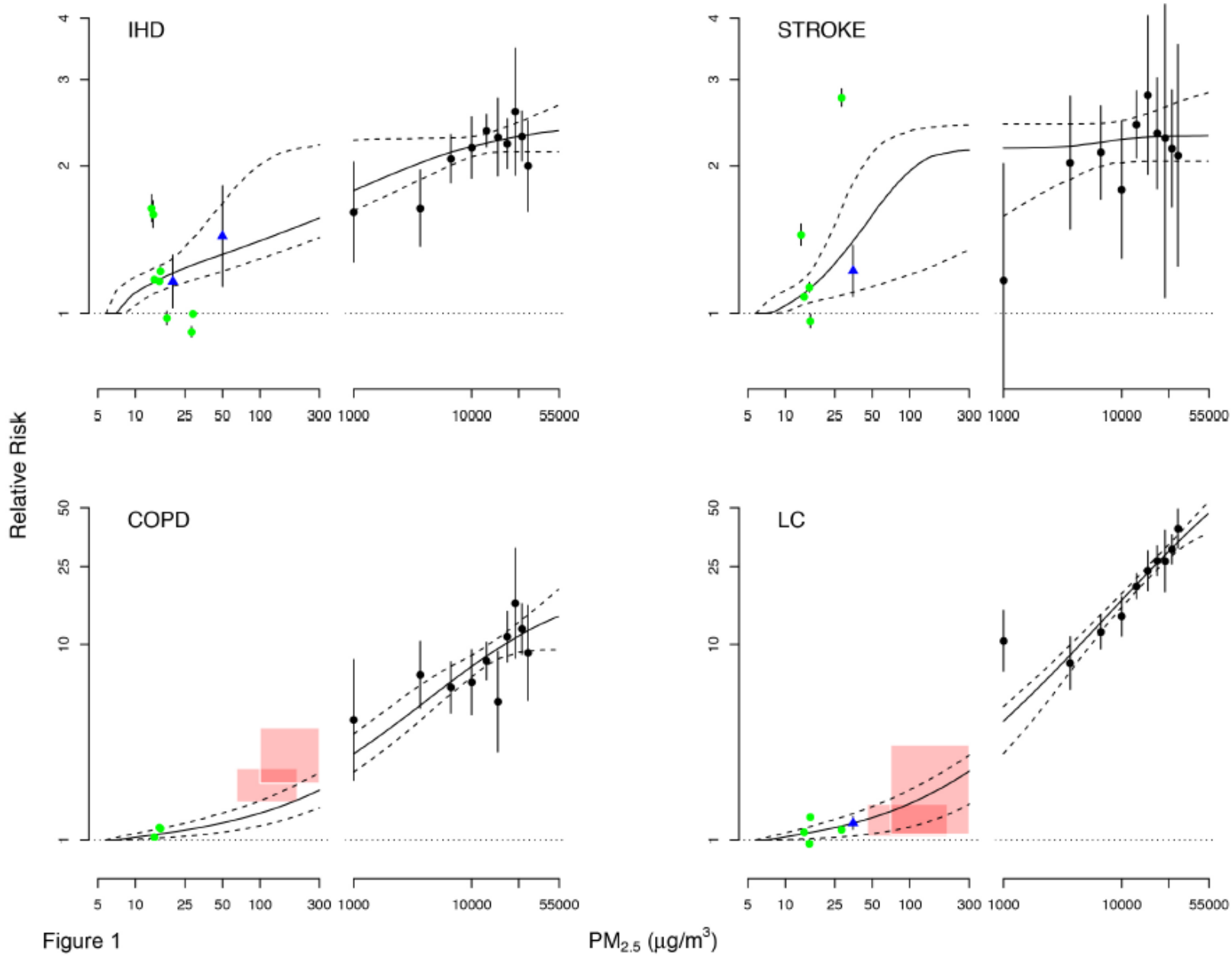


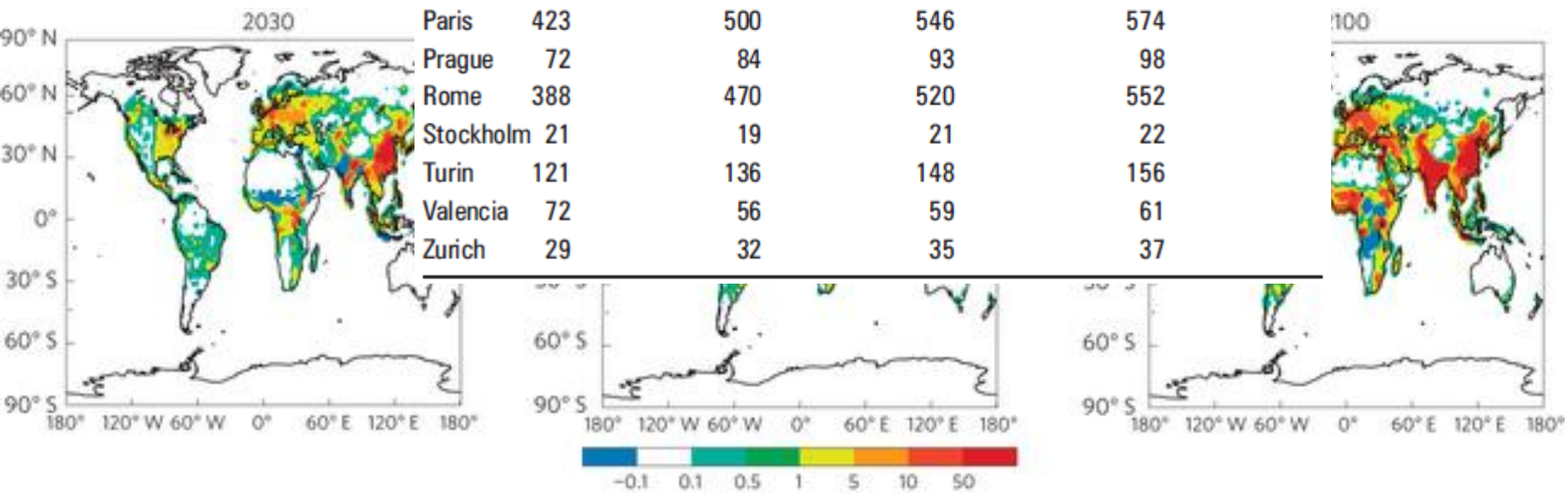
Figure 1

Burnett RT et al. An Integrated Risk Function (...) Environ Hlth Perspect
http://dx.doi.org/10.1289/ehp.1307049 Advance Publication: 11 February 2014

Baccini et al. JECH 2011 Jan;65(1):64-70.

Table 6 Mean number of attributable deaths per year, by city, calculated for the study period and projected at 2030 under low (B1), middle (A1B) and high (A2) greenhouse gas emission scenarios developed by IPCC (2007)

No of attributable deaths*				
	Observed series 1990–2000	B1 Low-emission scenario 2030 ΔT† = 0.54	A1B Middle-emission scenario 2030 ΔT† = 0.84	A2 High-emission scenario 2030 ΔT† = 1.02
Athens	230	316	376	415
Barcelona	290	319	338	350
Budapest	399	457	490	511
Dublin	0	0	1	1
Helsinki	11	14	17	18
Ljubljana	13	13	15	15
London	142	183	206	220
Milan	95	116	130	139
Paris	423	500	546	574
Prague	72	84	93	98
Rome	388	470	520	552
Stockholm	21	19	21	22
Turin	121	136	148	156
Valencia	72	56	59	61
Zurich	29	32	35	37



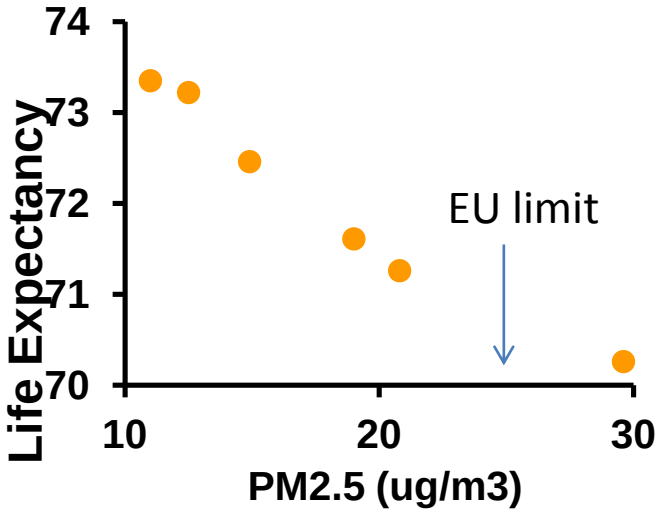
3. What approaches can be used to minimize public health impacts related to air quality emissions from fossil fuel processing?

- More controls and less emissions.

- Precautionary principle is used.
- Uncertainty analysis and extended democratic debate.

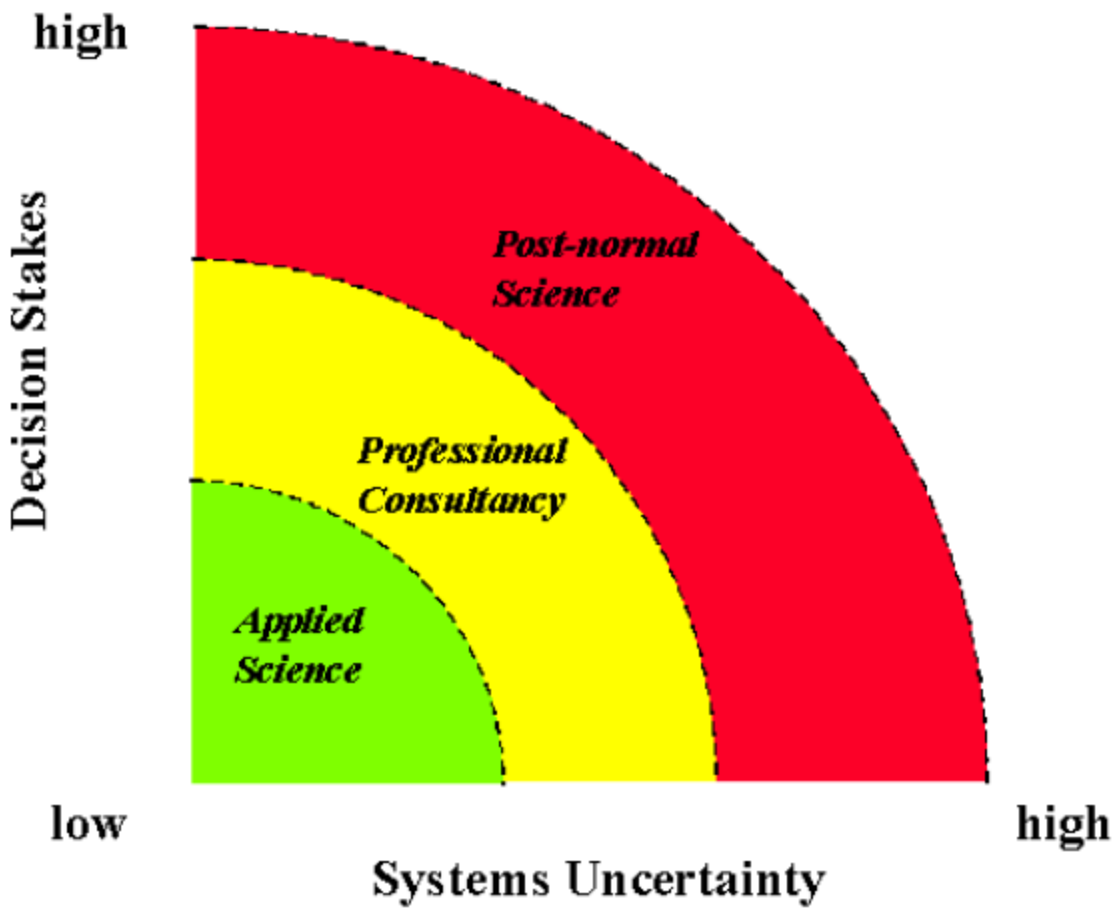
- A participatory approach
  (The Sarroch Bioteca Foundation: a trusted entity).

In Europe, 2013 was the "year of air", and in late December the European Commission announced a new policy package aiming to clean up Europe's air—by 2030. If apparently unambitious in its timeframe, the policy seems sensible because of the extremely damaging effects of air pollution on health. Risks of respiratory and cardiovascular diseases, including lung cancer, are associated with air pollution, illnesses that are likely to be borne disproportionately by people of low socioeconomic status. These risks provide a strong incentive on their own for action to reduce disease, limit health-care costs, and improve working productivity; in addition, the policy cites damage to natural and built environments caused by air pollution. By 2030, the policy estimates that spending some €3·3 billion per year on pollution mitigation across Europe could yield much greater annual aggregate savings worth at least €40 billion.



Editorial www.thelancet.com Vol 383 January 4, 2014

Europe's efforts to improve air quality are welcome, and will rightly receive detailed scrutiny over the long period during which the new regulations are to be enacted. In the UK, there are signs that the political environment is becoming less supportive to economic incentives underpinning the shift in power generation from fossil fuels to renewable alternatives. Such debates are unavoidable as countries balance the competing priorities of economic growth, industrial development, and individual health and wellbeing, which will be weighed differently in individual countries according to political priorities and their position along the development trajectory. As the world emerges from a painful period of economic contraction and uncertainty, it is important that gradually returning economic growth is harnessed to policies and incentives that lead to improvements in health, including tobacco control, limiting the damage caused by road traffic, and a sustained improvement in air quality in all countries, developed and developing. ■ *The Lancet*



Funtowicz and Ravets. Future sept 1993

Missing from the Table: Role of the Environmental Public Health Community in Governmental Advisory Commissions Related to Marcellus Shale Drilling

Bernard D. Goldstein, Jill Kriesky, and Barbara Pavliakova

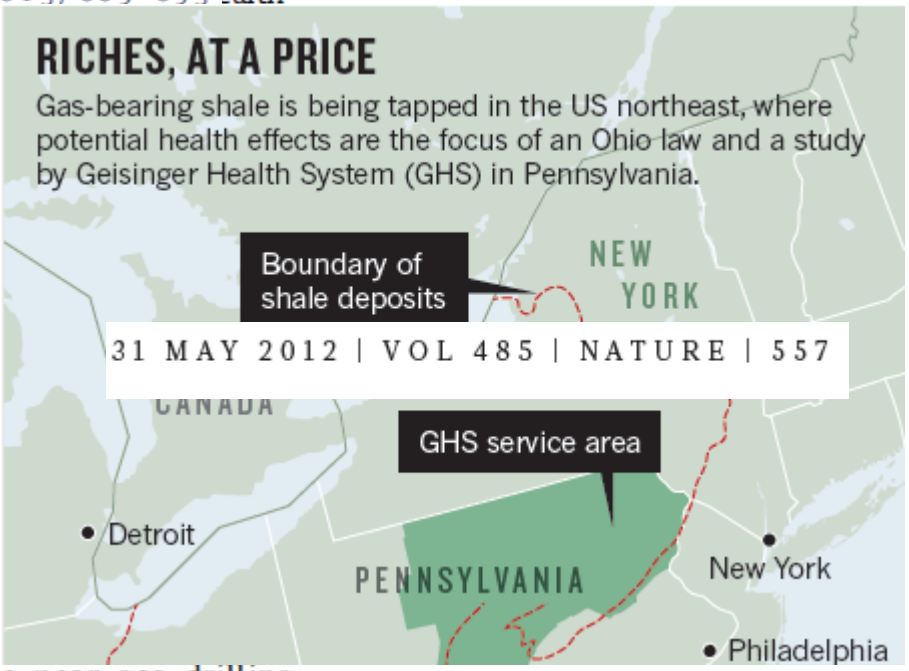
Graduate School of Public Health, University of Pittsburgh, Pittsburgh, Pennsylvani

Unconventional drilling for natural gas by means of high volume horizontal hydra fracturing (fracking) is an important global public health issue. Given that no sound epidemiologic study has been done to asses: PUBLIC HEALTH 127 (2013) 889–893 ealth effects among populations living in areas where natural gas extract imperative that research be conducted to quantify the potential risks and to human health not just in the short-term, but over a longer tim diseases (i.e., cancers) appear years after exposure. It should not b absence of data implies that no harm is being done.

ABSTRACT

Environmental concerns surrounding drilling for gas expansion of shale gas drilling operations. Controvers impact of drilling on air and water quality has pitted i holders against individuals and groups concerned w protection and public health. Because animals often are e to air, soil, and groundwater and have more frequent re animals can be used as sentinels to monitor impacts to l study involved interviews with animal owners who live near gas drilling operations. The findings illustrate which aspects of the d lead to health problems and suggest modifications tha not eliminate impacts. Complete evidence regarding hea drilling cannot be obtained due to incomplete testing chemicals, and nondisclosure agreements. Without rigorou the gas drilling boom sweeping the world will remain an experiment on an enormous scale.

"We don't know the impact on human health," she says, "and living in blissful ignorance isn't a solution." ■



IMPACTS OF GAS DRILLING ON HUMAN AND ANIMAL HEALTH

NEW SOLUTIONS, Vol. 22(1) 51-77, 2012

MICHELLE BAMBERGER
ROBERT E. OSWALD

4. What are the key knowledge gaps?

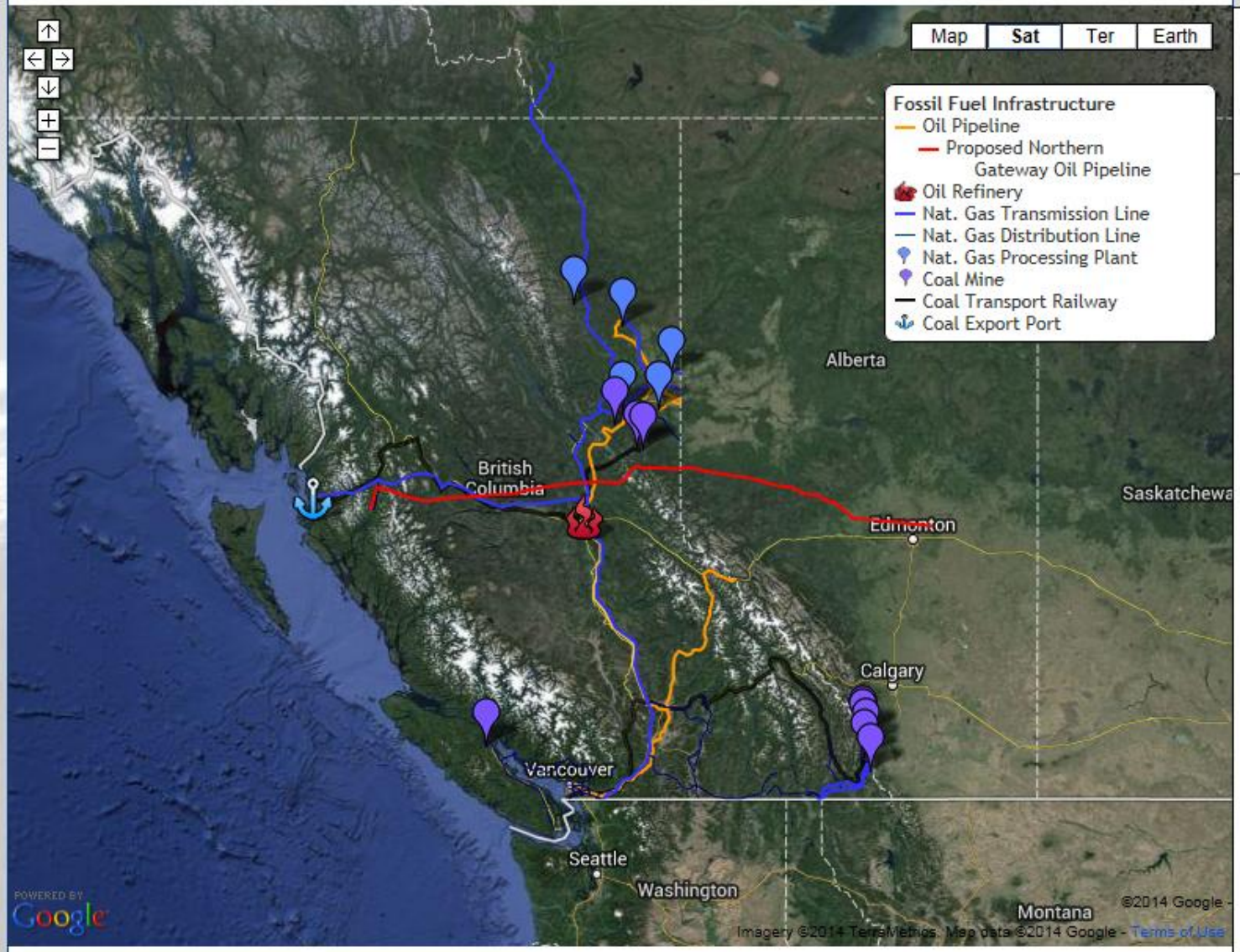
Topology of uncertainty.

tant. Variations in definitions of the environment, the health effects, and the scenarios assessed, unknown impacts of multi-causality and co-morbidity, lacking consensus about causality, controversial views about model structures, and many other sources of uncertainty may affect eBoD assessments, but cannot be easily quantified, and are usually not fully addressed.

CONTEXTUAL UNCERTAINTY	
1	Multiple ways of defining the 'total environment'
2	Only including diseases that cause at least 1% of the global burden of disease
MODEL STRUCTURE UNCERTAINTY	
3	Specific form of the exposure-response relationship is unknown
4	Evidence for causality (environmental factor leading to health effect) is weak and contradicting
5	Incomplete understanding of the joint effect of smoking and radon in relation to lung cancer
6	Accounting for susceptible groups if the available relative risk is not representative for this group
PARAMETER UNCERTAINTY	
7	Determining a relative risk (RR) for long-term exposure to PM_{10}
8	Applying an American RR for PM_{10} to the Netherlands
9	Use of severity weights
INPUT DATA UNCERTAINTY	
10	Extrapolating non-assessment-specific exposure measurements
11	Measuring population exposure

Kol, Van der Slujis
Environmental Health 2009 **8**:21

See also the criticism to risk analysis by S Jasanoff Science and Public Reason 2012 Rutledge



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The Sarroch Environment and Health Project

- In 2006 **the Municipality** of Sarroch (Sardinia, Italy), which hosts the second largest European oil refinery and petrochemical park, promoted the Project, which encompassed a complex set of epidemiological investigations to identify and quantify the environmental health risk.
- About one million Euros were spent. The project was a joint effort of the Sarroch Municipality, Universities, Cancer Institutes, and a non-profit organization (Epidemiologia & Prevenzione). One third supplied by independent research grants from EU and Italian Government.

Rationale of the project

- Identify the most frequent diseases
- Characterize the most relevant environmental exposures
- Prioritize exposures with known causal role
- Address the most suceptible population groups
- Prioritize short-term effects

The goal was to link epidemiologic data with immediate interventions.

communication - participation

Particular attention was taken to assure communication and participation of the population to the epidemiological project. The rationale of the project in each phase was discussed and agreed with the local community.

- An **air quality station** was set up and several monitoring campaigns took place. Three large **surveys** on respiratory disorders in childhood, two **panel studies** on asthmatic children, and a **bio-molecular study** of DNA adducts were conducted; a study of cardiovascular effects of industrial **noise** on the adult population was recently completed. Reports of the health profile of the population were published on 2006 and 2013.

- The studies released in May 2008 documented an adverse effect on children's respiratory health of the mixture of air pollutants in the area, notably sulfur dioxide hourly peaks above 100 μg/cm. **The Sarroch scientific results were not challenged by industry; instead they were discussed in both a scientific and a civic context**. The data supported the request to the Ministry of the Environment authorities for stricter rules on emission reduction; and the Ministry adopted them in its revised Authorization (Autorizzazioni Integrate Ambientali, AIA) issued in February 2009. **The implementation of the new rules produced a significant reduction of the yearly emissions of sulfur dioxide**: since 2009, only five episodes of higher peaks in four years of monitoring were registered by the Sarroch Environment and Health project.

CONOSCERE

COSA ABBIAMO FATTO

Abbiamo studiato lo **stato di salute** degli abitanti di Sarroch

Abbiamo studiato la **salute respiratoria dei bambini**

Abbiamo scritto **linee guida** per assistere meglio i bambini con problemi respiratori

Abbiamo misurato la **qualità dell'aria**

Abbiamo **messo in relazione** i dati sull'inquinamento dell'**aria** con quelli sulla **salute** respiratoria dei bambini

Abbiamo **confrontato i dati** sulla salute dei bambini e sulla qualità dell'aria di **Sarroch** con quelli del comune di **Burcei**

Abbiamo studiato anche **cosa pensano gli abitanti di Sarroch** della questione ambientale

COSA ABBIAMO TROVATO

Abbiamo visto che, nel complesso, a Sarroch **si muore meno** rispetto alla media regionale (quattro morti risparmiati ogni anno).
Ma se si contano solo i decessi per tumore, si deve constatare che ogni anno c'è **un decesso in più** di quelli che è lecito attendersi in un paese come il nostro. Anche le **malattie respiratorie** sono leggermente sopra la media regionale, sia negli adulti, sia nei bambini
(per approfondire leggi il pannello che riporta tutti i dati sullo stato di salute).

Abbiamo dimostrato che in paese c'è un **inquinamento atmosferico** che, pur rimanendo in media sotto i limiti di legge, varia nell'arco della giornata e di giorno in giorno. Picchi di anidride solforosa, polveri fini e benzene provenienti dagli impianti industriali raggiungono l'area abitata del territorio comunale.

Abbiamo trovato che questo inquinamento provoca effetti a breve e a lungo termine sulla salute dei bambini.
Per quanto riguarda gli **effetti a breve termine**, abbiamo visto che ogni volta che si verificano picchi di inquinamento, a distanza di due giorni si rilevano anche peggioramenti dei disturbi respiratori dei bambini.
Per quanto riguarda gli **effetti a lungo termine**, abbiamo dimostrato che i bimbi di Sarroch subiscono maggiori danni al DNA rispetto a bimbi che abitano in paesi senza inquinamento di origine industriale. Per fortuna questi danni sono **potenzialmente reversibili**, ovvero diminuiscono se diminuisce l'esposizione agli inquinanti.

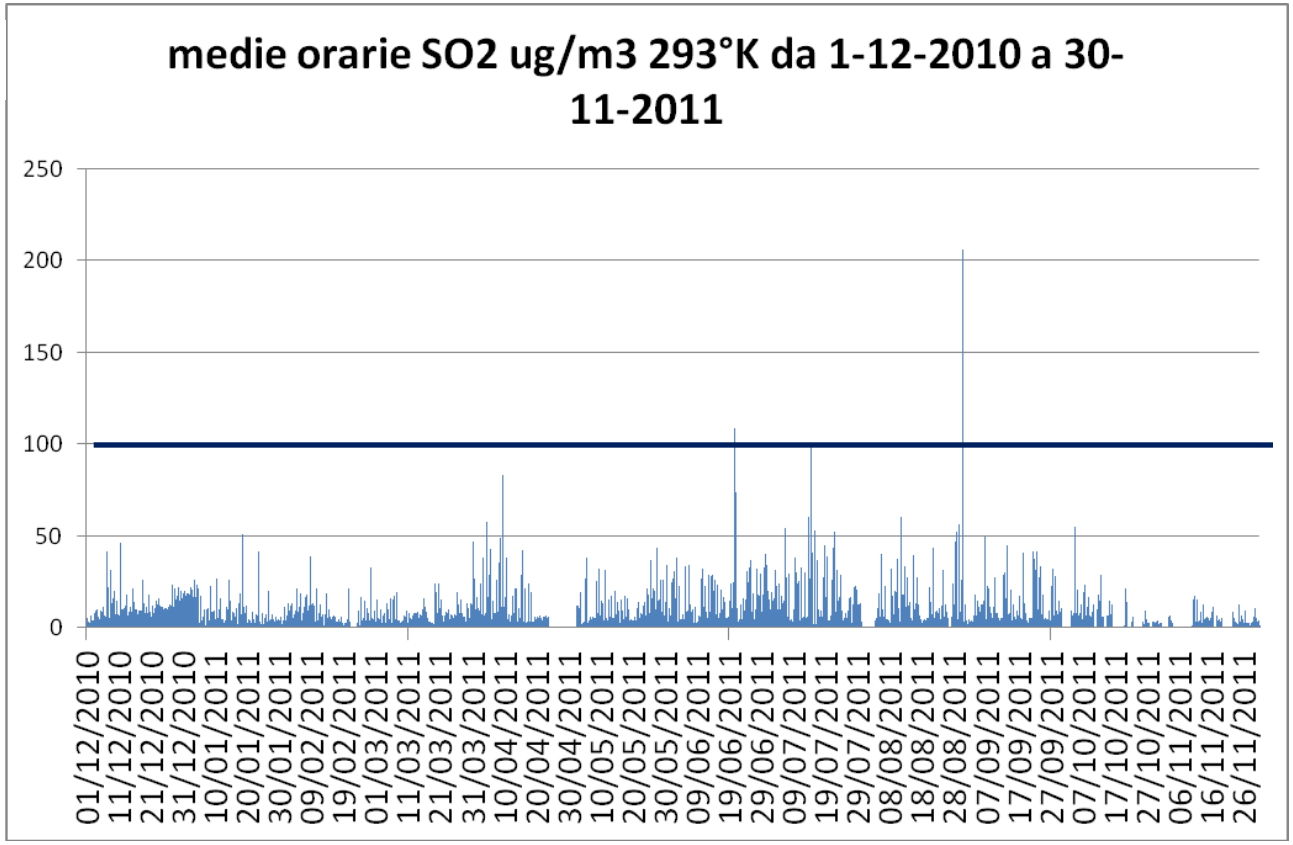
Grazie a questi studi, per la prima volta, siamo riusciti a dimostrare scientificamente che c'è una relazione tra lo stato di salute della popolazione e le condizioni ambientali

COSA ABBIAMO OTTENUTO

Abbiamo ottenuto ciò che consideriamo UN GRANDE SUCCESSO:

per gli inquinanti più significativi si stabiliranno soglie di attenzione ben al di sotto dei livelli di legge che faranno scattare azioni di mitigazione IMMEDIATE. Un esempio:

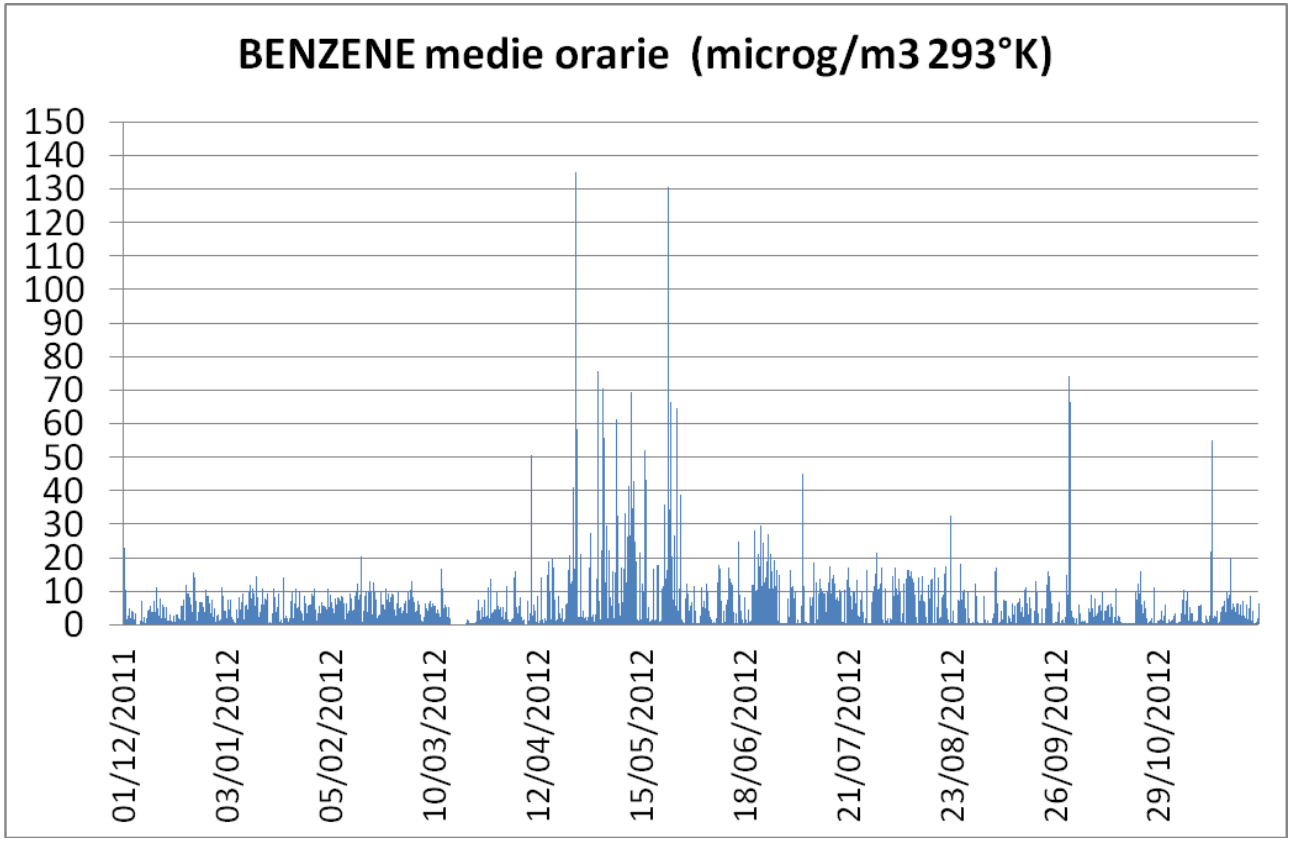
- **per l'anidride solforosa (SO2) il limite* è di 500 µ/m^3** (s. att. 350)
- **il nuovo livello di attenzione sarà inferiore a 100 µ/m^3**



co-production of knowledge

One important characteristic of the project was the production of technical and scientific knowledge which integrated the information from istitutional bodies (e.g. the local environmental protection agency)

new priorities



After 2009 new priorities were then identified:

- **Epidemiological and environmental surveillance of benzene and polycyclic aromatic hydrocarbons (PAH), metals and other constituents of the mixture of pollutants** in the area required a different study design.

- Due to the small size of the population (around five thousand people) traditional cohort studies have a very low statistical power.

- Therefore, in the second project phase, the research team decided to dedicate all efforts to design a **biomonitoring** study – to characterize the population exposure spectrum and to quantify selected molecular risk indicators.

- In order to design the biomonitoring study several initiatives aimed to improve communication and participation were planned. The original research group was enlarged to include expertise on communication and participation, sociology , law, and ethics.

- On December 2009 the idea of setting up a public biobank was discussed. The biobank represented a techno-scientific tool to monitor the population health/exposure.

- The biobank was planned to be physically located in the village.

- It was immediately clear that mainstream visions and existing regulations for **biobanks could not meet the needs** and goals of the Sarroch case. The project is framed as a civic initiative; it looks at population health and at collective well-being.

- The main shift concerned the current understanding of biobanks, conceived to favor researchers' needs and commercial exploitation of genetic materials and information.

- Inherent in the concept of "**Bioteca**" – the Italian term evokes the word "public library" (biblio-teca)— is its public destination: an **independent foundation**, collectively owned by citizens, and located not within a scientific institute, but in the center of the village.

- On August 4th, 2010, the Municipal Council approved the by-laws of the Bioteca Foundation and the new body was officially recognized on August 27th, 2012.

- The by-laws of the Bioteca Foundation state that environment and health are a collective endeavor, and that the biological samples supplied by the exposed population are stored for research aimed to improve population well-being in a clean environment. Citizens are by definition entitled to be members of the initiative, but they are asked to formally give their adhesion to the Bioteca Foundation, and through time they can contribute, by agreeing to ad hoc informed consents, to specific research.
- Therefore, citizens can participate with different degree of engagement.
- They can adhere to the project as such and then they can provide their informed consent to specific research. Moreover, the use of the biological materials stored in the Bioteca must be negotiated with citizens' consent every time.

FOCUS

LA BIOTECA DI SARROCH: UNO STRUMENTO CIVICO A TUTELA DELLA SALUTE UMANA E AMBIENTALE

Le biobanche sono strutture in cui vengono raccolti e conservati materiali biologici (per es. sangue, urine, tessuti, capelli, unghie) "donati" o comunque prelevati da individui sani o ammalati, e le informazioni (personali, cliniche, genetiche) a essi associati.
Anche se numerose collezioni di materiali biologici e dati hanno avuto origine da studi epidemiologici e di popolazione (come è accaduto, per esempio in Islanda e in Norvegia), l'evoluzione e il consolidamento delle

tossiche, la loro eventuale persistenza ed eliminazione, la reversibilità delle modificazioni biologiche precoci e, in alcuni casi, dei danni (ad esempio, nel caso di alterazioni al patrimonio genetico, grazie ai meccanismi spontanei di riparazione del Dna). Inoltre, dato il rapido sviluppo delle conoscenze e delle tecnologie nel settore, è pensabile che in futuro saranno possibili ulteriori analisi, oggi non disponibili o addirittura neppure ipotizzabili.
Il progetto iniziale di biobanca era

La sede della bioteca di Sarroch in via di ultimazione.

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La Bioteca di Sarroch: comunicare con i fatti

The Sarroch Biolibrary: Communicating by Doing

Circa tre anni fa ha cominciato a delinearsi a Sarroch, in provincia di Cagliari, l'idea di costituire una Biobanca[1] al fine di monitorare la salute dei cittadini, in particolare in relazione allo stato dell'ambiente, dato che nel comune si trova il principale polo industriale della Sardegna, con una raffineria

le tecnologie nel settore, è pensabile che in futuro si potranno effettuare sul materiale biologico conservato delle analisi che oggi non sono disponibili o addirittura neppure ipotizzabili.

Dalla Biobanca alla Bioteca

Monitoring health or surveilling industry ? Community-based biobanks in Italian highly polluted sites

M Tallacchini for the JRC/SETICS group and A Biggeri for the Sarroch Environment and Health Project

The imaginaries about surveillance have been inseparable from top-down visions of power and control. But, in Epidemiology and Public Health monitoring and surveillance represent a more “neutral” longstanding tradition of detecting and possibly anticipating health effects within a given population. In the last decade we register biobanking rise and collaboration between scientists and citizens in doing scientific activities.

- How can these “participatory surveillance” activities be framed? They can hardly be reconciled with traditional epidemiology.
- Is “participatory surveillance” radically reinventing surveillance (as some scholarly literature suggests)?
- Or does it merely apply a reversed, bottom-up gaze while sharing the same logic of power and pressure?

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Environment and Health of Oil Refinery: A Case Study in Sardinia (Italy)

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