

Zero Waste: A Stepping Stone to Sustainability

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Personal Introduction

I first got involved in waste management 29 years ago when a trash incinerator was proposed for our area in Northern NY
I had little idea then that this issue would take me to 62 different countries

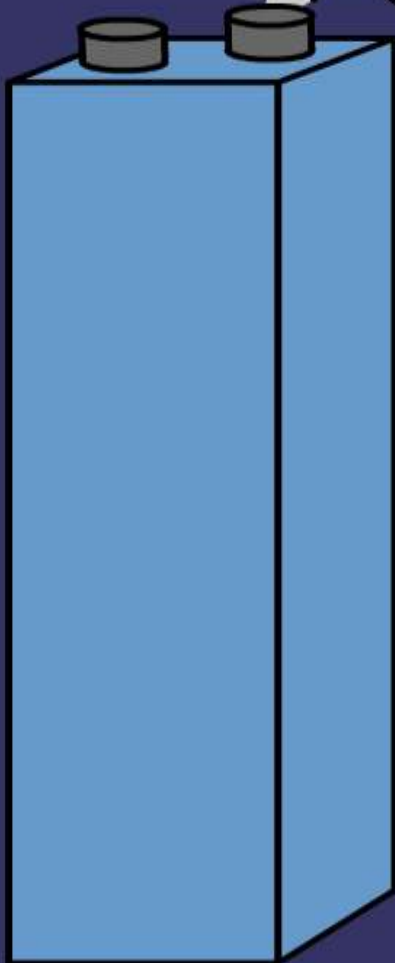
In the beginning

As a professor of chemistry my primary concern was about the air pollution incineration produced...

Incinerators put many highly toxic and persistent substances into the air



AIR EMISSIONS



- CO₂ + H₂O

- ACID GASES:
HCl, HF, SO₂
NO_x

- TOXIC METALS:
Pb, Cd, Hg, As, Cr etc

- NEW COMPOUNDS:

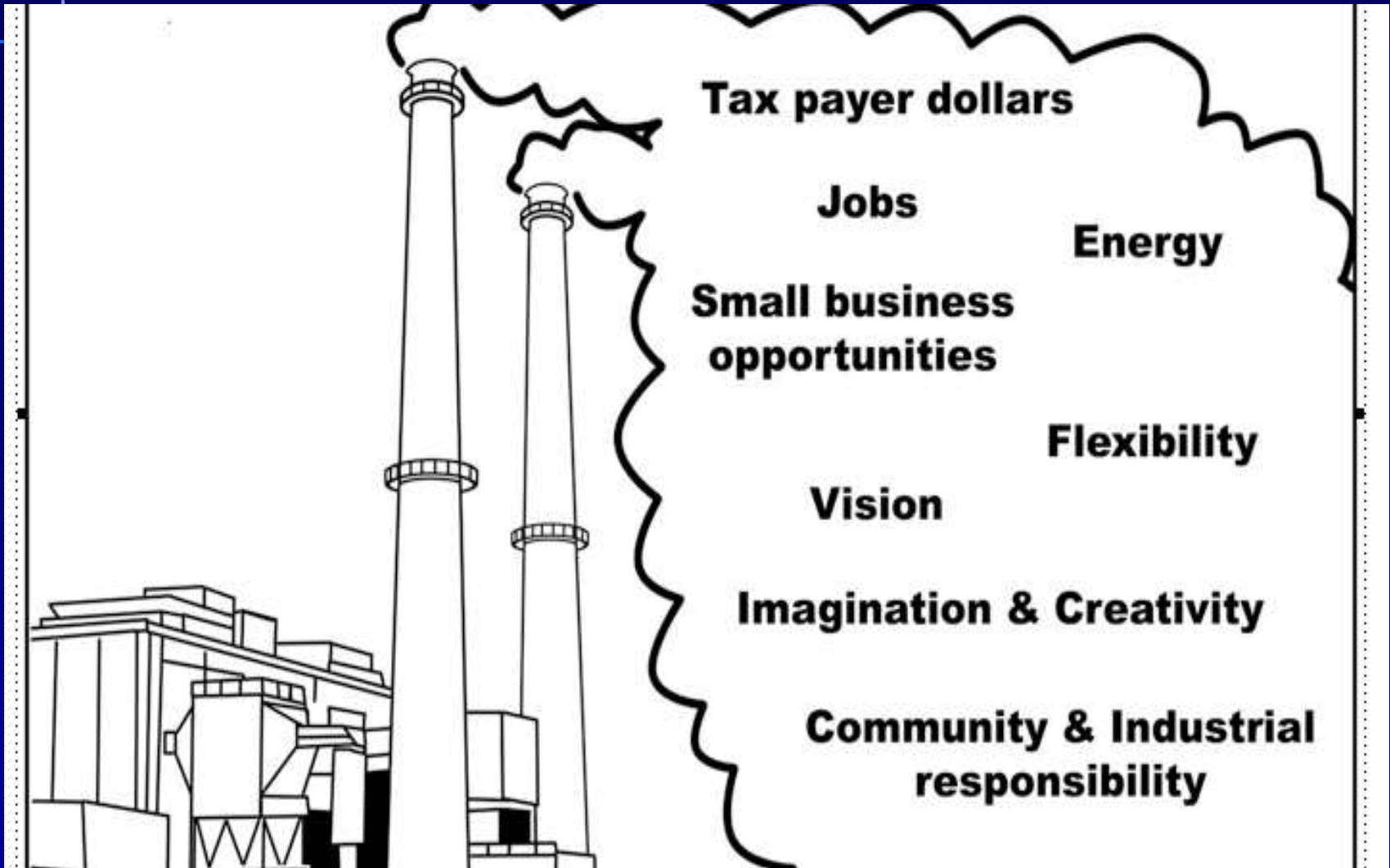
PCDDs (DIOXINS)
PCDFs (FURANS)
PCB' s
ETC

Now

I am far more concerned about the wasted opportunities that incineration represents
In addition to wasting finite material resources ...

**Much more goes up in incineration smoke
than toxic pollutants!**

**Much more goes up in incineration smoke
than toxic pollutants!**



A modern incinerator looks better, but...



It is attempting to perfect a bad idea

- Our task in the 21st Century is not to get better at destroying discarded materials
- **But to stop making packaging and products that have to be destroyed!**

**Incineration is simply
NOT sustainable**

INCINERATION

Every time you
burn something
you have to go
back to square 1



Extraction

Production

Consumption

Waste

The Linear Society

THE
ZERO 

Untrashing the Planet One Community at a Time

WASTE

How cities and towns around the world are saying no to incinerators and wasteful product design

SOLUTION

and yes to radical recycling, reuse entrepreneurs, and the jobs they create

PAUL CONNETT

Foreword written by
Jeremy Irons

BLenheim FILMS PRESENTS
JEREMY IRONS

FILM SCORE COMPOSED & PERFORMED BY
VANGELIS

TRASHED

IF YOU THINK WASTE IS SOMEONE ELSE'S PROBLEM
...THINK AGAIN



BLenheim FILMS PRESENTS TRASHED A DOCUMENTARY FILM DIRECTED BY JEREMY IRONS
DOCUMENTARY COMPOSED & PERFORMED BY VANGELIS DIRECTED BY PRODUCTION SEAN ROBERTS BSC, TOTOS SOLVY & PETER OTCHEV
ART DIRECTOR GARRY WALLER EDITOR JAMES CONNARD KATE COUGINS & JANE TREVILL EXECUTIVE PRODUCERS THE MILL & CREATIVITY MEDIA
EXECUTIVE PRODUCER TANTOHA THORNTON EXECUTIVE PRODUCERS JEREMY IRONS CANDIDA BRADY TOTOS SOLVY & TOM WISSEL
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WWW.TRASHEDFILM.COM



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NYLPI



ALION



TRASHED
NO PLACE FOR WASTE

**JEREMY IRONS
& CANDIDA BRADY**

INVITE YOU TO A
PRIVATE SCREENING OF

TRASHED

ON FRIDAY, SEPTEMBER 7TH 2012

AT TRIBECA CINEMAS

54 VARICK STREET, NEW YORK, NY 10013
(NEAR CANAL STREET)

JOIN US AT 3PM FOR A **SHORT Q&A SESSION**
SCREENING AT 3.30PM
AND AFTERWARDS FOR A **PANEL DISCUSSION**
ON WASTE SOLUTIONS

PLEASE RSVP
TO HOLLY@BLenheimFILMS.COM
BY AUGUST 10TH



OFFICIAL SELECTION
FESTIVAL DE CANNES
2012



Subtitle of the Book:

**“Untrashing the Planet One
Community at a Time.”**

OUTLINE

- 1) A few words about Sustainability
- 2) Ten Steps to Zero Waste (including the 4th R)
- 3) More arguments against incineration

1. A few words about Sustainability

**We are living on this
planet as if we had
another one to go to!**

Sustainability

- We would need **FOUR planets** if every one consumed as much as the average **American**
- We would need **TWO planets** if every one consumed as much as the average **European**
- Meanwhile, **India, China etc.** are copying our consumption patterns
- Something has got to change and **the best place to start is with waste**

As far as sustainability is concerned

Every ton of waste that we landfill or incinerate takes us in the wrong direction

Whereas, every ton we

Compost,

Reuse,

Recycle, or

Avoid

Takes us in the right direction

The Waste problem will not be solved with better **technology**

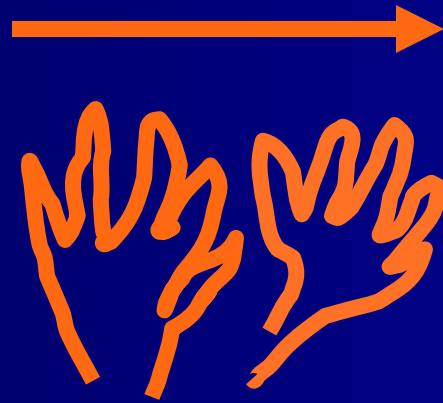
- But with
- Better **organization**
- Better **education**
- and better **industrial design**

**2. TEN STEPS
TO
ZERO WASTE**

STEP 1.

1. Source Separation

Waste



Resources

STEP 2.

1.
**Source
Separation**

2.
**Door to Door
Collection**

The San Francisco system



Once a week pick-up

In Wales, some communities are serviced by collection systems which sort at kerb (“slow recycling”)

Intelligent - from kerb to depot.



RT™

ROMAQUIP
KERB-SORT™
Be kind. Be green. Be smart.

N
bus

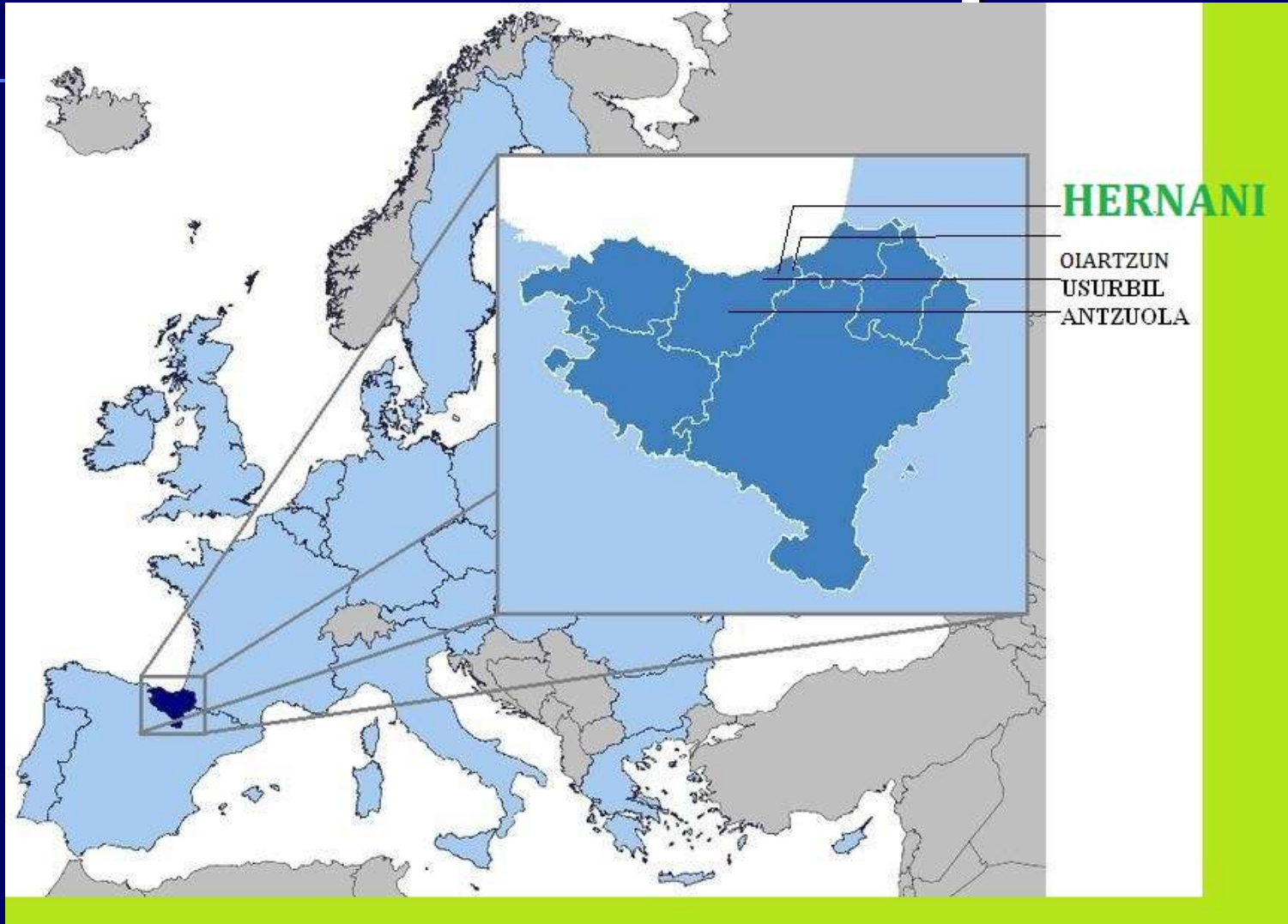




Capannori

LUNEDI	ORGANICO	
MARTEDI	MULTIMATERIALE	
MERCOLEDI	CARTA	
GIOVEDI	FRAZIONE RESIDUA	
VENERDI	ORGANICO	
SABATO	MULTIMATERIALE	

Hernani en Europa







HORARIO Y CALENDARIO DE RECOGIDA

	lunes	martes	miércoles	jueves	viernes	sábado	domingo
9:00					rechazo		
23:00	envases ligeros	papel-cartón	orgánico	envases ligeros	orgánico	rechazo	orgánico









Calidad del compost



Pureza del 99,76 %

STEP 3.

1.
**Source
Separation**

2.
**Door to Door
Collection**

3.
Composting

Discarded organics hierarchy

- 1) Feed people (see *The Stop* by Saul and Curtis)
- 2) Feed animals
- 3) Feed the soil

Composting (and vermiculture) Hierarchy

- a) Backyard and onsite (institutions)
- b) Community composting (e.g. Zurich)
- c) On farms
- d) Centralized facility (also anaerobic digestion)

discover how we're

Helping the community
Helping the environment

by working with:

Local businesses
National retailers
Community caterers

who we are:

About us
Our story
What we do
Who we support
How we complement
other national schemes
Charity registration
details
Contact us

Welcome to re-plenish - the Oxford food bank



Making a difference

re-plenish, the Oxford food bank, is all about making a difference. Making a difference to how we think about food and waste, making a difference in how we treat our world and making a difference to people's lives.

re-plenish is a food bank which takes unsold food from local supermarkets and suppliers and redistributes it to community food projects in and around Oxford. This simple system provides healthy, wholesome food to people who need it and reduces the amount of unsold food that ends up in landfill.

Call 07813 961841



Get Involved!

Give time, money
or resources >>

Search the blog

SEARCH

Recent Posts

- New deliveries
- re-plenish on TV!
- re-plenish launched!

RSS Feeds

- All posts
- All comments

RSS Facebook

Friends of re-plenish



Italia

In time collection of food
from supermarkets and
restaurants

Prof. Andrea Segre

Agriculture Dept., U. of
Bologna

andrasegre@unibo.it

The Composting plant



Serving San Francisco



Over 200 vineyards use the compost

Local farmers use compost



The fruit and vegetables go back to restaurants in San Francisco



For restaurants it is 25% cheaper to put out clean organics than mixed waste



We must involve restaurant owners



STEP 4.

**1.
Source
Separation**

**2.
Door to Door
Collection**

**3.
Composting**

**4.
Recycling**

Recycling facility on Pier 96





The separation lines





STEP 5.

**Reuse and
Repair
Centers
(Community
Centers)**



URBAN ORE ECOPARK





- Urban Ore operating for 30 years

- Grossing \$3 million per year
- 27 full-time well-paid jobs



1. ALL SALE IS COM
 2. A CASH REGISTE
 3. NO REFUNDS WI
 4. CASH REGISTER
- NO REFUNDS AF
PLEASE BE REAL
YOUR CASH REG
UPON REQUIE

HANZEN
CIRCUS

ADY
OMBIT

441 BR
P
RIN
SE
UR









ReSource, Burlington, Vermont



ReSource, Burlington, Vermont



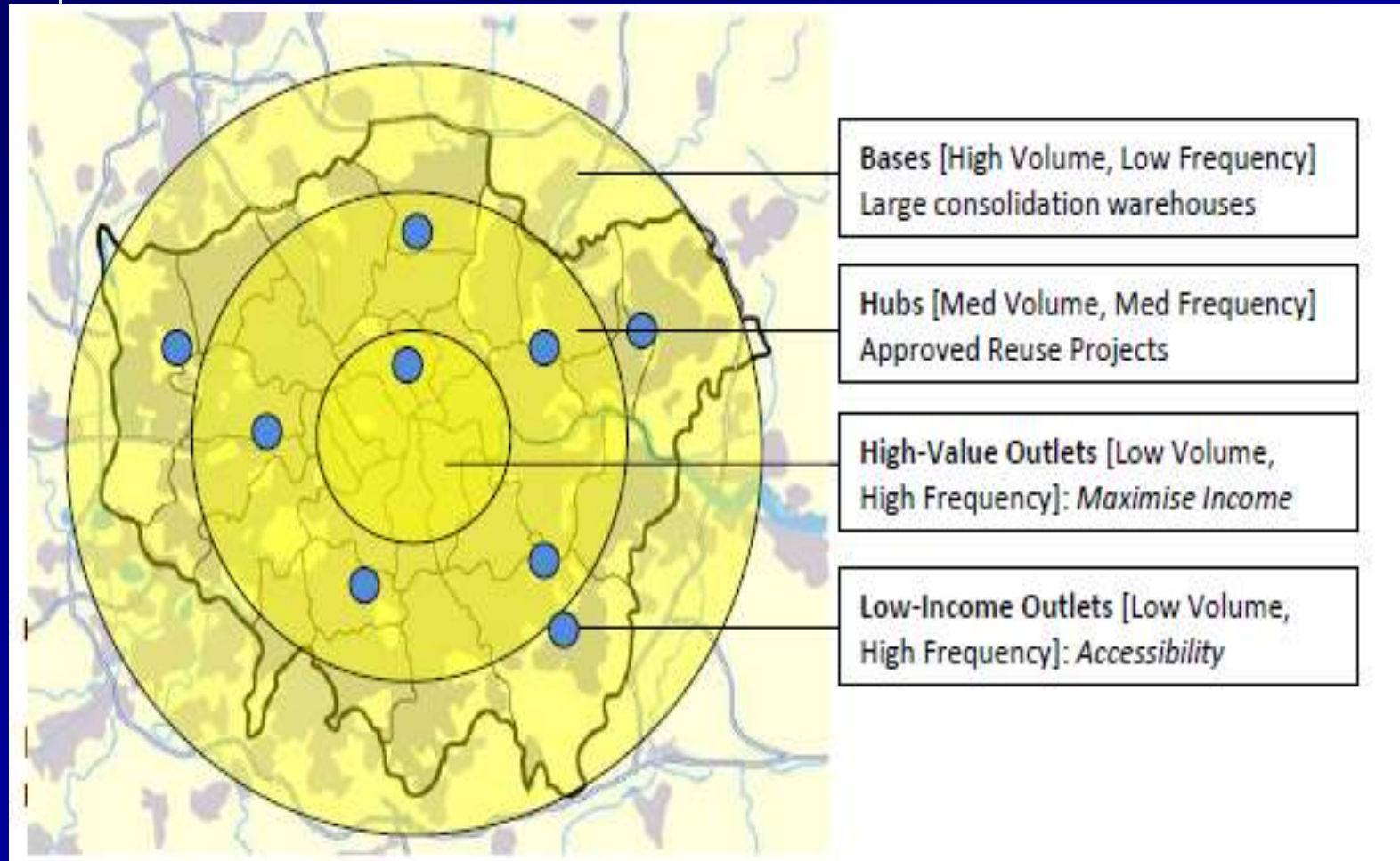
Resource

EYE & EAR PROTECTION





LONDON, UK has put \$ 6 million into 9 Reuse and Repair centers



Opened by Mayor of London





solute **dsm**.com





ReIY
Reuse It Yourself

Reuse & Repair Centers

- Poverty Relief
- Job Creation
- Job Training
- Link to deconstruction businesses
- Link to value-added enterprises
- Community Development
- To fight overconsumption we need to recreate the village within the city

VIDEOS ONLINE

On the Road to Zero Waste see

- www.AmericanHealthStudies.org

Kretsloppsparken – the Reuse Park in Gottenburg, Sweden.



Aterbruket

Här kan du lämna hela och användbara:

- Skåp/möbler
- Frysar/kyllar, kylskåp
- Stolar, tvättmaskiner, kaffin
- Kylskåp/kyllar
- VVB-garage
- Frys, tvättmaskin
- Kylskåp
- Skåp/möbler
- Kaffin
- Stolar

Returhuset

Exempel

- Frys
- Kylskåp
- Skåp/möbler
- Kaffin
- Stolar
- VVB-garage
- Frys
- Kylskåp
- Skåp/möbler
- Kaffin
- Stolar

MYRORNA

18/09/2010 11:51



18/09/2010 12:21



GÖTEBORGAREN

15/04/2011 03:59



18/09/2010 11:24





07/06/2011 08:21

THE DELEGATION FOR
SUSTAINABLE CITIES



I ❤️
Kretsloppsparken
Alelyckan

STEP 6.

Waste Reduction Initiatives

We have to minimize the residual fraction with...

Ireland

- Government put a **15 cent** tax on plastic shopping bags
- reduced use **by 92%** in one year!



In Ontario, Canada

- They have been REUSING glass beer bottles for over 60 years!

In Ontario, Canada



Italy

- Several supermarket chains are providing dispensers which allow customers to refill **shampoo** and **detergent** bottles...

**Effecorta,
A food store in
Capannori,
Tuscany, Italy**



L'esperienza effecorta

www.effecorta.it

60 taps





REFILL SYSTEM FOR DETERGENTS



EFFECORTA

Filiera Corta di prodotti sfusi e alla spina

tel. 0583 704332 www.efficorta.it

Il olio d'oliva extra
virginio e di
primissima qualità
è messo nella
bottiglia in
stagione alla spina
e conservato
in...



OLIVE OIL



WINE

No plastic bags used



TAP WATER INSTEAD OF BOTTLED WATER



**GLASS INSTEAD OF
PLASTIC BOTTLES**

REUSABLE PAMPERS

ecobimbi

Pannolino Ecologico Lavabile



STEP 7.

\$\$\$

Economic Incentives

The “ Pay by bag” system

1

2

3

free

free

The “Pay by bag” system

1

2

\$

free

free

**The more
you make
the more
you pay!**

Italia

- **Villafranca d' Asti**
(population = 3,000) went from 70% to 85% using “pay by bag” system

**1.
Source
Separation**

**2.
Door to Door
Collection**

**3.
Composting**

**4.
Recycling**

**5. Reuse,
Repair &
Deconstruction**

**6. Waste
Reduction
Initiatives**

**7.
Economic
Incentives**

Step 8
Is the most
important step
For Zero Waste

8A. The Residual Screening Facility

Nova Scotia, Canada

- These are built IN FRONT of the landfills
- No waste can go directly to the landfill. It must first go through the screening facility



sundancerphoto









RESIDUAL SCREENING FACILITY



**MORE
RECYCLABLES**



MORE TOXICS



**DIRTY
ORGANIC
FRACTION**



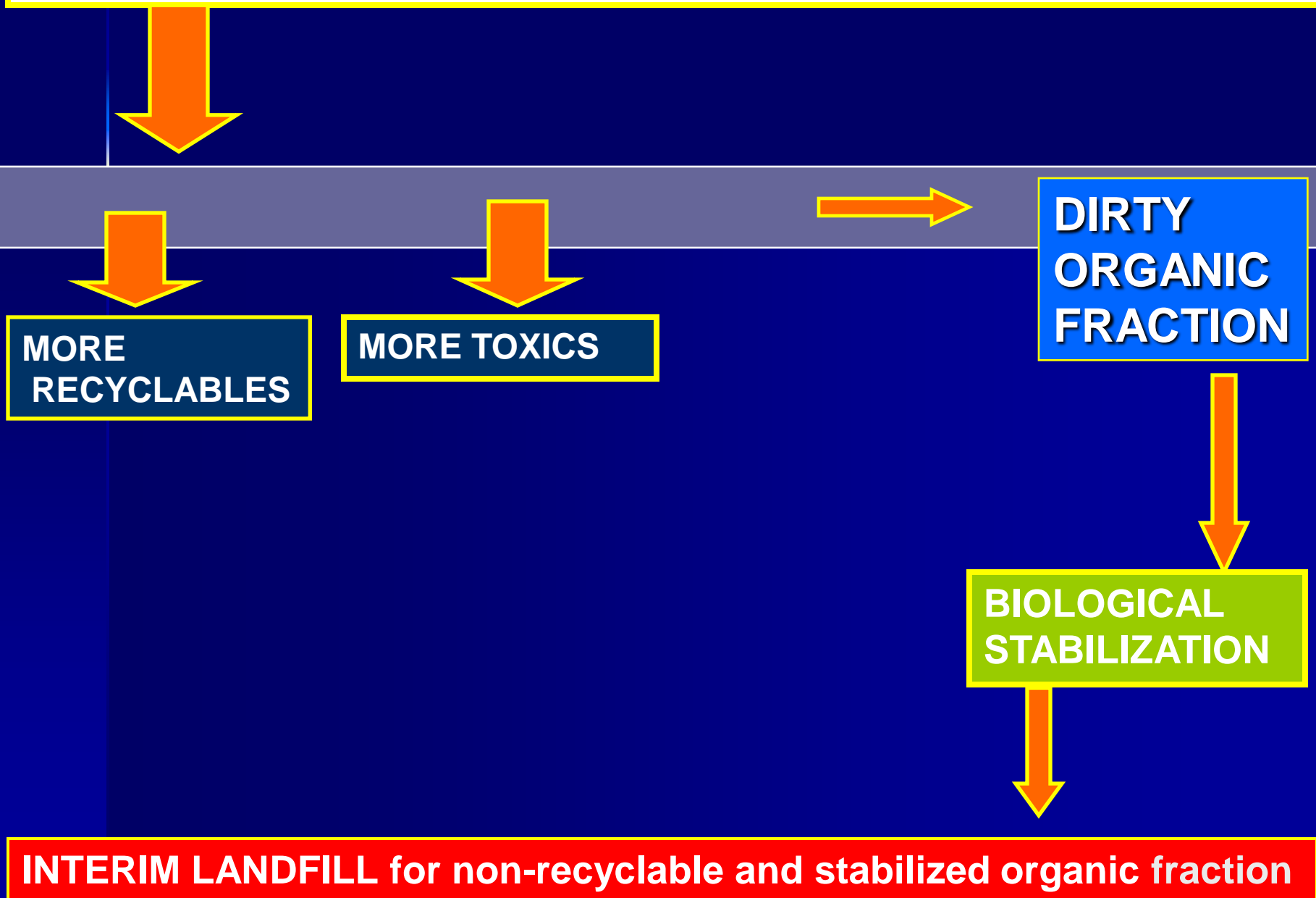








RESIDUAL SCREENING FACILITY













8B.

**THE ZERO WASTE
RESEARCH CENTER**

RESIDUAL SCREENING & RESEARCH FACILITY



**MORE
RECYCLABLES**

MORE TOXICS

**DIRTY
ORGANIC
FRACTION**

NON-RECYCLABLE FRACTION

**ZERO WASTE
RESEARCH
CENTER**

NON-RECYCABLE MATERIALS

**Local
University**

**Or
Technical College**

**ZERO WASTE
RESEARCH CENTER**

RESEARCH CENTER

- Recommend better designs to industry on packaging and products

THE RESIDUAL SEPARATION AND ZERO WASTE RESEARCH CENTER



The Message to Industry:

- If we can't reuse it, recycle it or compost it,
- Industry shouldn't be making it
- We need better industrial design for the 21st Century

On Jan 23, 2010

**Capannori launched its
Rifiuti Zero Research
Center**

Rossano Ercolini

Ambientefuturo@interfree.it

338-28-66-215

FRAZIONE RESIDUA - Capannori Porta a Porta

1.	Tessili e cuolo	16.52 %
2.	Pannolini	13.95 %
3.	Materiale organico da cucina	10.56 %
4.	Altra plastica: non imballo	9.98 %
5.	Imballaggi cellulosici poliaccoppiati	8.05 %
6.	Imballaggi poliaccoppiati in plastica	7.45 %
7.	Imballaggi flessibili in plastica	6.81 %
8.	Materiale organico da giardino	4.64 %
9.	Imballaggi rigidi in plastica (non bottiglie)	3.23 %
10	Giornali (quotidiani e riviste)	2.54 %



REUSABLE PAMPERS

ecobimbi

Pannolino Ecologico Lavabile





LETTERA APERTA ALLA LAVAZZA

Spettabile Lavazza

Dal giugno 2010, il Comune di Capannori (Lucca, popolazione 46.000 abitanti e sede del distretto cartario più importante d'Italia) ha promosso il progetto "Passi concreti verso rifiuti zero" fondato sulla costituzione del **CENTRO RICERCA**

RIFIUTI ZERO.

Tale Centro di Ricerca, dotato di un team operativo e di un Comitato Scientifico presieduto dal professor **Paul Connett**, ha lo scopo di STUDIARE la composizione del RIFIUTO RESIDUO "a valle" di raccolte differenziate che hanno raggiunto la media (certificata dalla Regione Toscana) dell'81%. A partire dallo scorso luglio il team operativo del Centro di Ricerca al cui interno operano sia esperti di gestione dei **rifiuti** che progettisti sono stati effettuati diversi sopralluoghi presso la stazione di trasferimento dei rifiuti del comune dove viene conferito il "rifiuto non riciclabile". Attraverso questi sopralluoghi condotti in collaborazione con il soggetto gestore ASCIT si è riscontrato una grande quantità di **CAPSULE DA CAFFÈ**. In merito il soggetto gestore ci ha confermato che l'indicazione che viene data alle utenze circa la gestione di tale imballaggio è quella della collocazione nel contenitore del "residuo" da inviare a smaltimento in quanto trattasi di plastica parzialmente contaminata dalla residua polvere di caffè.

Poiché il comune di Capannori nel **2007** è stato il primo in Italia ad approvare una DELIBERA RIFIUTI ZERO entro il 2020 collocandosi tra le numerose municipalità che a livello internazionale (soprattutto in California ed in USA così come in Canada, Australia, Sud America ed adesso anche in Europa) perseguono questo obiettivo; poiché, altresì la RD nel comune raggiunge livelli ottimali che testimoniano un alto livello responsabilizzazione dell'intera comunità *APPARE DI ESTREMA ATTUALITA' E NECESSITA' ACQUISIRE LA COLLABORAZIONE DELLE IMPRESE* PRODUTTRICI. Tanto più se la conseguenza dei loro prodotti è rappresentata da scarti non aventi alcuna alternativa alle operazioni di smaltimento.

Per questo il CENTRO DI RICERCA ha aperto un "caso studio" su questa tipologia di imballaggio muovendo dalla constatazione DI UN **ERRORE DI PROGETTAZIONE** DELLO STESSO (vedi su www.rifiutizerocapannori.it) per aprire senza alcun spirito polemico un "percorso condiviso" per un suo "ripensamento" in grado di superare le "criticità" attualmente evidenziate dai sopralluoghi. Già, nel corso di un seminario nazionale tenutosi a Capannori il 20-21 novembre scorsi è stato avanzato un "ventaglio" di **ALTERNATIVE** a cui, cortesemente, VORREMMO COINVOLGERVI considerando anche la necessità da parte dei produttori di avviarsi sempre più nella direzione di **farsi carico dei propri prodotti** dalla "culla alla tomba".

In questo percorso di RESPONSABILIZZAZIONE risiede o meno la possibilità di vincere la "sfida della sostenibilità ambientale" a cui tutti (cittadini, imprese e enti pubblici) siamo chiamati a rispondere. **Una disponibilità vostra ad aprire un confronto costruttivo** sarebbe di grande rilevanza non solo per contribuire a risolvere una "criticità" relativa ad una corretta gestione dei materiali di scarto ma anche per avviare un processo positivo nella applicazione di una **RESPONSABILITA' ESTESA DELLE IMPRESE** legata a criteri di *sostenibilità ambientale* e di *eticità*.

Capannori ...



Il responsabile del Progetto
Rossano Ercolini

ZERO WASTE

ZERO WASTE

Community Responsibility
= Reduce, Reuse,
Recycle/Compost

The 4th R

The 4th R =

RE-DESIGN

ZERO WASTE

Community Responsibility
= Reduce, Reuse,
Recycle/Compost

Industrial Responsibility
= Re-Design

STEP 9.

9. Better Industrial Design

10. An interim landfill
for biologically
stabilized dirty organic
fraction

**1.
Source
Separation**

**2.
Door to Door
Collection**

**3.
Composting**

**4.
Recycling**

**5. Reuse,
Repair &
Deconstruction**

**6. Waste
Reduction
Initiatives**

**7.
Economic
Incentives**

**8. Residual
Separation &
Research
Center**

**9. Better
Industrial
Design**

10. Interim Landfill

2020

**1.
Source
Separation**

**2.
Door to Door
Collection**

**3.
Composting**

**4.
Recycling**

**5. Reuse,
Repair &
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Economic
Incentives**

**8. Residual
Separation &
Research
Center**

**9. Better
Industrial
Design**

10. Interim Landfill

2020





**Sustainable
Agriculture**

**Education
For
Sustainability**

**Sustainable
Architecture**

**Sustainable
industries
& Jobs**

**Zero Waste
2020**

**Sustainable
Energy**

**Sustainable
Community
development**

**Sustainable
Economic
development**

This plan

1) Is better for the Economy...

MORE JOBS

2) Is better for our HEALTH...

LESS TOXICS

3) Is better for our UNIVERSITIES

MORE MEANING

4) Is better for the PLANET...

MORE SUSTAINABLE

5) Is better for our CHILDREN...

MORE HOPE

How far have we got?

San Francisco

- Population = 850,000
- **Very little space**
- 50% waste diverted by 2000
- 80% waste diverted by 2011
- **ZERO WASTE by 2020 (or very close!)**

Italy

- Over 200 communities achieving over 70% diversion-
- and some very quickly

Italy

- **Salerno** (near Naples, pop 145,000) 18% to 72% **in two years!**

Flanders

This whole province in Belgium (population 6 million people) is getting 73% diversion



ECO-CYCLE ZERO WASTE PARK



Alexon
Studio

bryan bowen architects, p.c.
1112 ZAMIA AVENUE #101 • BOULDER, COLORADO 80504 • 303.440.1410



We need 5 C's to underpin the 4 R's of Zero Waste

1) Common Sense

Don't let the experts take your common sense away

2) Community

We need to empower communities to protect their air, water, food, resources, their land

3) Creativity

We can't expect to outmatch corporate looters for money, but we can beat them on creativity

We need 5 C's to underpin the 4 R's of Zero Waste

4) Children

We need to involve children early in public service and the struggle for sustainability

5) Communication

When we achieve any success – large or small –we must communicate it around the country and the world (video/internet)

Information – communication –motivation-
action

***We can't leave these matters to
"waste experts" or "sustainability
experts" we must involve
everyone!***

**A BIG obstacle to Zero Waste
is INCINERATION**

4. Arguments against Incineration

**1) Incineration is NOT
sustainable**

INCINERATION

Every time you
burn something
you have to go
back to square 1



Extraction

Production

Consumption

Waste

The Linear Society

2) Incineration is very unpopular with the public

Incineration is very unpopular with the public

- In the US between 1985-95 over 300 incinerator projects were stopped

Incineration is very unpopular with the public

- In the US between 1985-95 over 300 incinerator projects were stopped
- Today in China there is tremendous opposition to new incinerator projects

Report from China today (Sept 16, 2014)

South China Morning Post

Published on *South China Morning Post* (<http://www.scmp.com>)

[Home](#) > Incinerator dioxin levels reduced but new rules allow more types of waste to be burned

Incinerator dioxin levels reduced but new rules allow more types of waste

Tuesday, 16 September, 2014, 4:29am

News>China

ENVIRONMENT

Li Jing jing.li@scmp.com

“Protests over municipal incinerators have broken out in cities in recent years, with the latest taking place in Huizhou , Guangdong, on the weekend. In May, another rally in Hangzhou , Zhejiang , turned violent.”



3) Incineration is a waste of energy!

- About 4 X more energy saved by reusing, recycling and composting the various components in the discard stream – than burning them to create electricity
- Dr. Jeffrey Morris,
jeff.morris@zerowaste.com

Energy Comparison: **Recycling** versus **incineration** (ICF consulting, 2005)

material	Energy savings from recycling GJ/tonne	Energy output from incineration GJ/tonne	Energy savings recycling versus incineration
Newsprint	6.33	2.62	2.4
Fine paper	15.87	2.23	7.1
Cardboard	8.56	2.31	3.7
Other paper	9.49	2.25	4.2
HDPE	64.27	6.30	10.2
PET	85.16	3.22	26.4
Other plastic	52.09	4.76	10.9

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HDPE	64.27	6.30	10.2
PET	85.16	3.22	26.4
Other plastic	52.09	4.76	10.9

4) Incineration is a poor investment

- **Most of the money spent on incinerators goes into complicated machinery and leaves the community (and even the country)**
- **Over half the money spent on a modern incinerator goes into air pollution control equipment**
- **Incineration is one of the most expensive way of generating electricity**

5) Incineration creates very few jobs

- In contrast, the money spent on the alternatives goes into jobs and stays in the community.**

An incinerator in Brescia, Italy



The Brescia incinerator
cost **300,000,000** Euro
and has created just **80**
jobs.

Another **500,000,000** Euro
spent on energy subsidies

Nova Scotia program (Canada)

- Diverted 50% of waste from landfill in 5 years (Halifax ~ 60%)
- **1000 jobs created** in collection and treatment of recyclables and compostables
- **Another 2000 jobs created** in the industries handling the recovered materials

6. Incineration wastes valuable time in the movement towards sustainability!

- **It takes about 25 years (or more) to pay off the massive capital investment costs involved with building an incinerator.**
- **We don't have this time to waste!**

7) Incineration stifles innovation

- **“An incinerator needs to be fed for about 20 to 30 years and in order to be economic needs an enormous input from quite a region, so for 20 to 30 years you stifle innovation, you stifle alternatives, just in order to feed that monster which you build”**
- **Ludwig Kraemer, former Head of EU Waste Management, BBC 1 Panorama Documentary “Rubbish”**

Ke
wa

Kent's waste contract could be money in the bin

-term

Ten years ago, the authority signed a 25-year deal with Kent Enviropower to provide them with 320,000 tonnes of waste to burn each year.

But what was initially seen as a cash-saving opportunity has quickly turned into a money pit, as the council is forced to send increasingly valuable recyclable material to the incinerator in order to meet its annual quota.

Although it was signed in 1998, the contract only came into affect recently as it took nearly ten years to apply for planning permission and building the incinerator, which has been dogged by controversy itself due to high levels of flies and foul odours.

But in the last decade, many more economically and environmentally friendly methods of waste disposal have also been put into action, making the use of incinerators increasingly uneconomical.

Councillor Keith Ferrin, the council's environment spokesman, said it had been a 'stupid' decision in hindsight, but there had been no way to predict changes to the industry.

He said: "The people who thought they were being very clever and economical with people's money ten years ago have produced a situation where the reverse is true, as KCC is now committed to a contract we can't get out of.

8) Incineration makes handling waste very complicated and dangerous

Think of an incinerator as three boxes

1.

The **Furnace** which
Converts 100's of
Tons of trash into
Trillions of tiny
Toxic particles
and gases.

Think of an incinerator as three boxes

1.

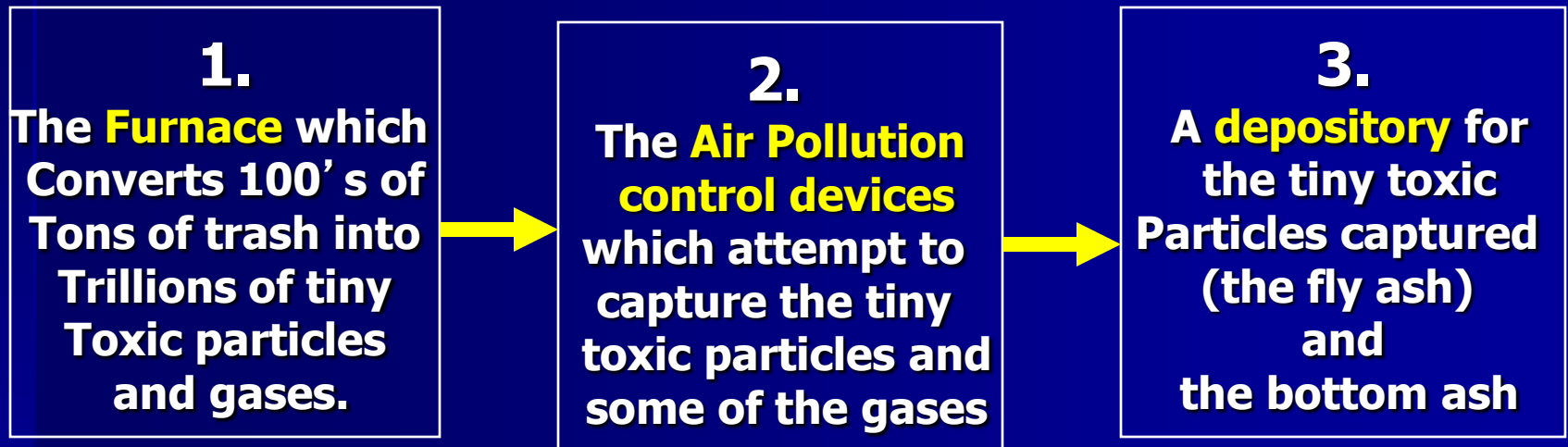
The **Furnace** which
Converts 100's of
Tons of trash into
Trillions of tiny
Toxic particles
and gases.



2.

The **Air Pollution
control devices**
which attempt to
capture the tiny
toxic particles and
some of the gases

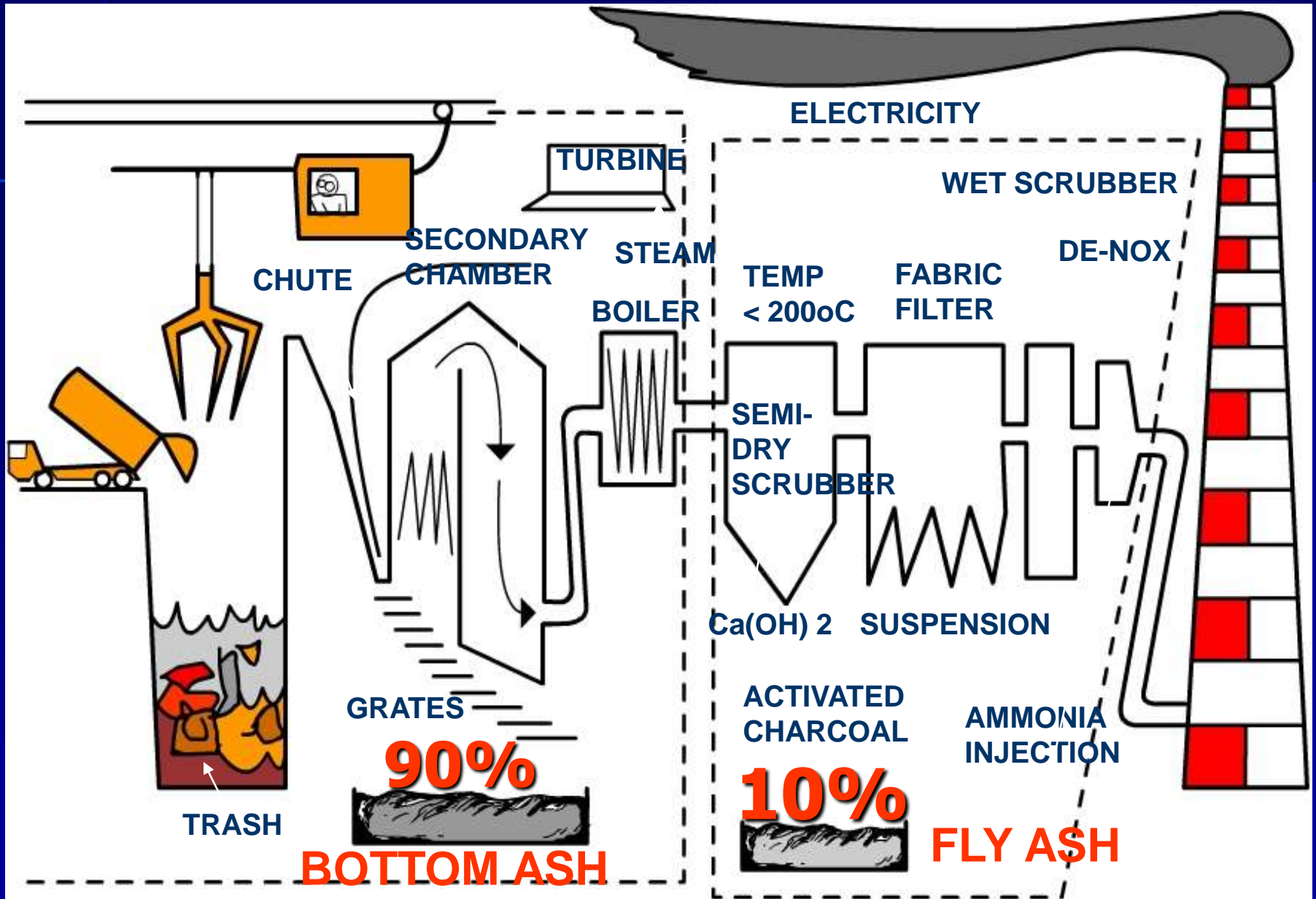
Think of an incinerator as three boxes



9) Incinerators produce a toxic ash

- For every **four** tons of waste burned you get **one ton of ash (or more)**
- That nobody wants!

For every 4 tons of trash you get about one ton of ash



Ash is toxic and difficult to get rid of

- In Germany & Switzerland **the fly ash** is put into nylon bags and placed in salt mines
- In Japan some incinerators vitrify the ash
- In Denmark...
- They send all the ash to Norway!

**In the UK the fly ash is sent
to hazardous waste landfills**

In the UK the fly ash is sent to hazardous waste landfills

- The following slides were taken from a presentation at the UK House of Commons (Nov 2, 2010) by Barbara Farmer of the group SWARD (***a citizens' group fighting a fly ash landfill near Gloucester and featured in the movie TRASHED***)

BLenheim FILMS PRESENTS
JEREMY IRONS

FILM SCORE COMPOSED & PERFORMED BY
VANGELIS

TRASHED

IF YOU THINK WASTE IS SOMEONE ELSE'S PROBLEM
...THINK AGAIN



BLenheim FILMS PRESENTS TRASHED A DOCUMENTARY FILM DIRECTED BY JEREMY IRONS
MUSIC COMPOSED & PERFORMED BY VANGELIS DIRECTED BY PRODUCERS SEAN ROBERTS BSC, TOTOS SOLVY & PETER OYER
ART DIRECTOR GARRY WALLER EDITOR JAMES CONARD KATE COUGHS & JANE TREVILL EXEC PRODUCERS THE MILL & CREATIVITY MEDIA
EXECUTIVE PRODUCERS TANTOHA THORNTON EXECUTIVE PRODUCERS JEREMY IRONS CANDIDA BRADY TOTOS SOLVY & TOM WISEL
PRODUCED BY CANDIDA BRADY & TOTOS SOLVY WITH A SCRIPT BY CANDIDA BRADY
WWW.TRASHEDFILM.COM



SUPPORTED BY



NYLPI



ALION



TRASHED
NO PLACE FOR WASTE

**JEREMY IRONS
& CANDIDA BRADY**

INVITE YOU TO A
PRIVATE SCREENING OF

TRASHED

ON FRIDAY, SEPTEMBER 7TH 2012

AT TRIBECA CINEMAS

54 VARICK STREET, NEW YORK, NY 10013
(NEAR CANAL STREET)

JOIN US AT 3PM FOR A **SHORT Q&A SESSION**

SCREENING AT 3.30PM

AND AFTERWARDS FOR A **PANEL DISCUSSION**
ON WASTE SOLUTIONS

PLEASE RSVP
TO HOLLY@BLenheimFILMS.COM
BY AUGUST 10TH



OFFICIAL SELECTION
FESTIVAL DE CANNES
2012







40 mph road sign covered in ash



**10) Incineration does not
get rid of landfills**

10) Incineration does not get rid of landfills

- In the US the fly and bottom ash are mixed before testing and then sent to municipal landfills or “combined ash” landfills

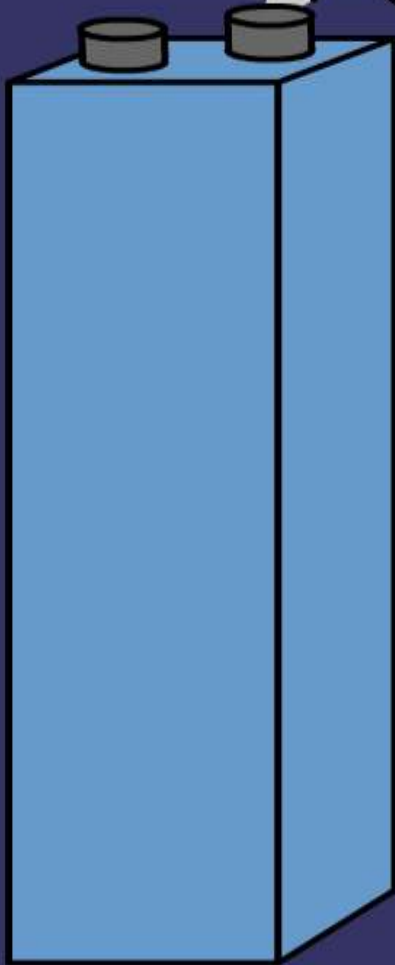
A “combined ash” landfill in Haverhill, Massachusetts



11) Incinerators put many highly toxic and persistent substances into the air

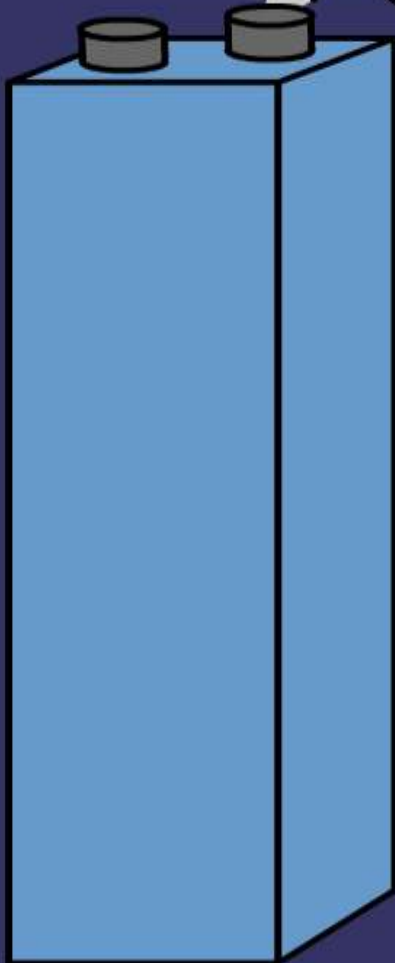


AIR EMISSIONS



- CO₂ + H₂O
- ACID GASES:
HCl, HF, SO₂
NO_x
-
-

AIR EMISSIONS



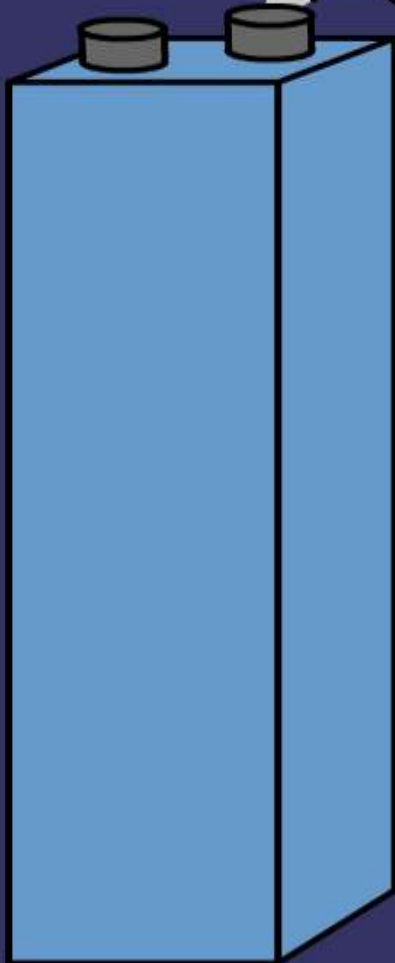
- CO₂ + H₂O

- ACID GASES:
HCl, HF, SO₂
NO_x

- TOXIC METALS:
Pb, Cd, Hg, As, Cr etc

-

AIR EMISSIONS



- CO₂ + H₂O

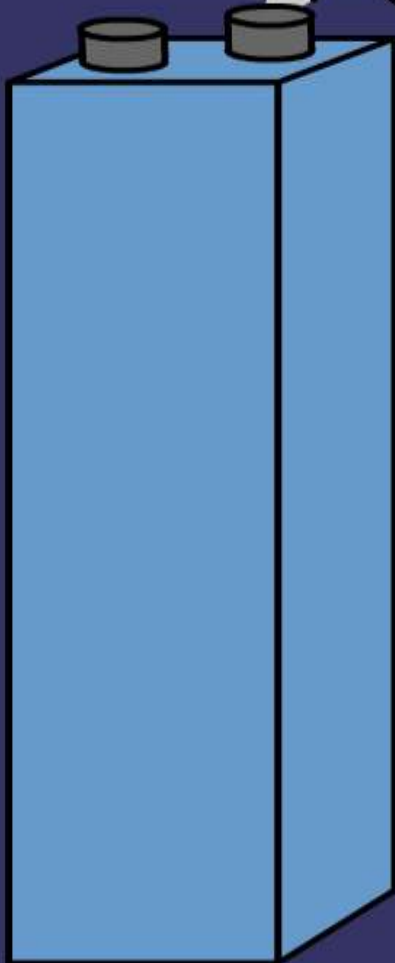
- ACID GASES:
HCl, HF, SO₂
NO_x

- TOXIC METALS:
Pb, Cd, Hg, As, Cr etc

- NEW COMPOUNDS:

PCDDs (DIOXINS)
PCDFs (FURANS)
PCB' s
ETC

AIR EMISSIONS



- CO₂ + H₂O

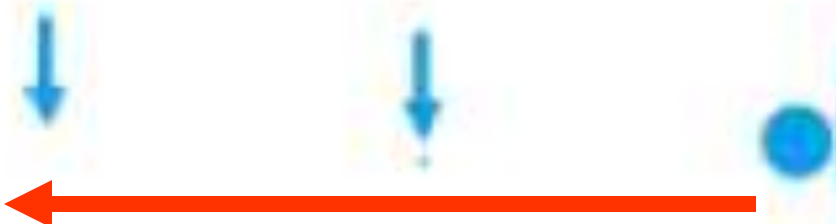
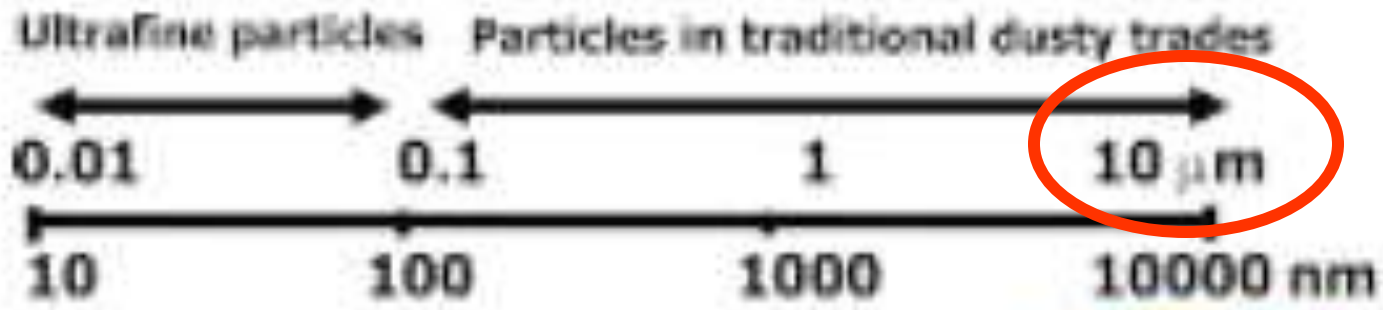
- ACID GASES:
HCl, HF, SO₂
NO_x

- TOXIC METALS:
Pb, Cd, Hg, As, Cr etc

- NEW COMPOUNDS:

PCDDs (DIOXINS)
PCDFs (FURANS)
PCB's
ETC

NANO
PARTICLES



NANOPARTICLES

Size of Particle regulated in incinerator emissions

Figure 3 Relative size of ultrafine particles compared with particles in traditional dusty trades.

Review

Origin and Health Impacts of Emissions of Toxic By-Products and Fine Particles from Combustion and Thermal Treatment of Hazardous Wastes and Materials

Stephania A. Cormier,¹ Sawo Lomnicki,² Wayne Backes,³ and Barry Dellinger²

¹Department of Biological Science, and ²Department of Chemistry, Louisiana State University, Baton Rouge, Louisiana, USA;

³Department of Pharmacology, Louisiana State University Health Sciences Center, Baton Rouge, Louisiana, USA

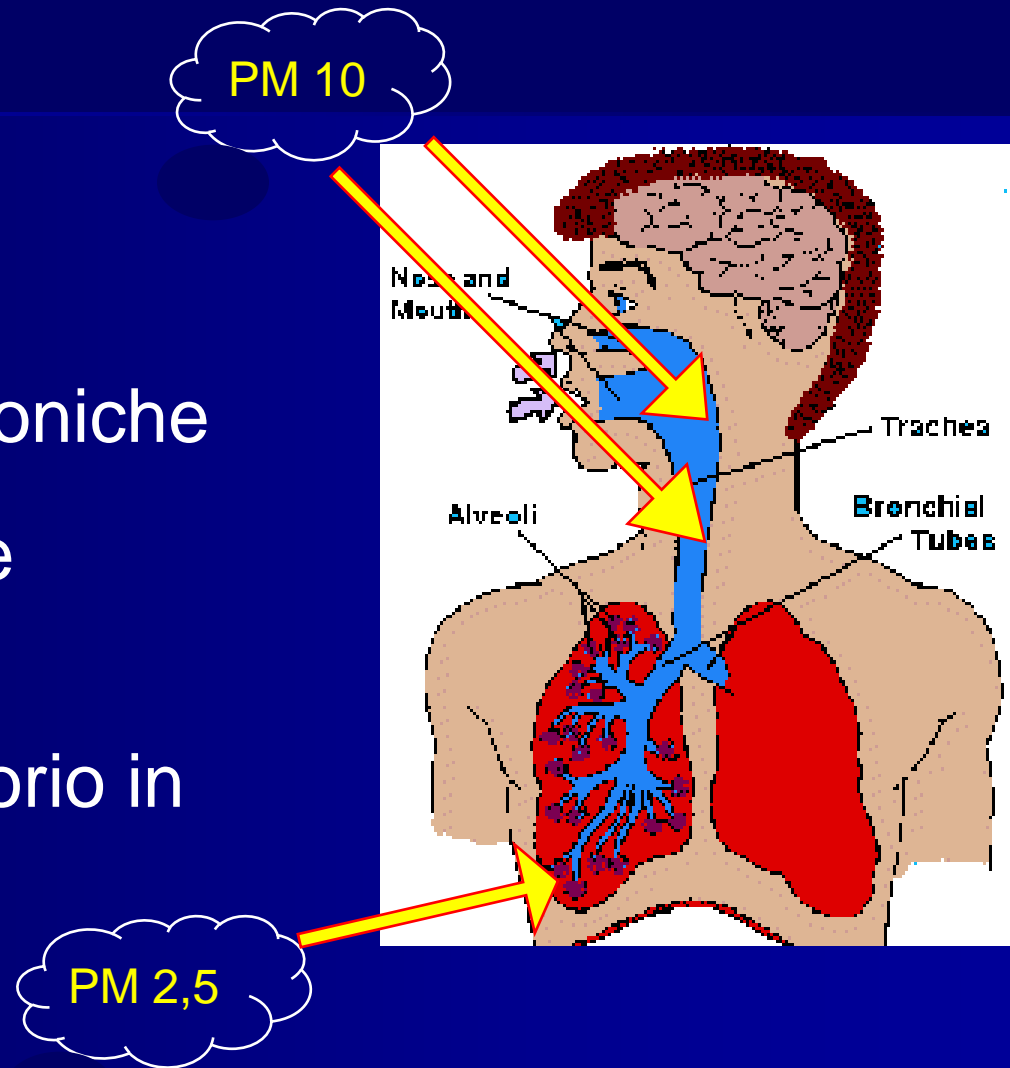
VOLUME 114 | NUMBER 6 **June 2006** • Environmental Health Perspectives

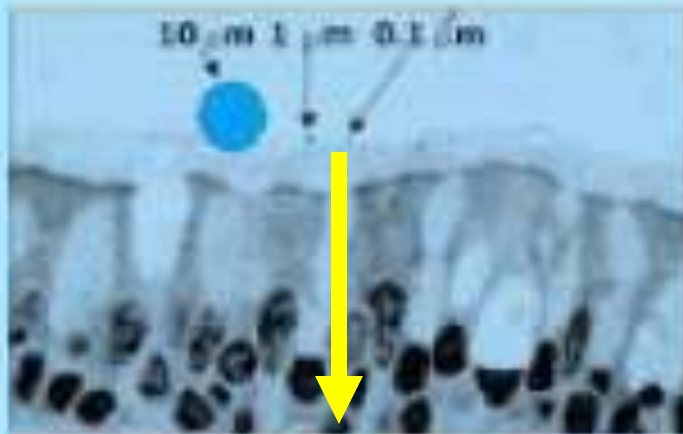
Incineration and nanoparticles

- **Nanoparticles are not efficiently captured by air pollution control devices**
- **Travel long distances**
- **Remain suspended for long periods of time (especially during air inversions)**
- **Penetrate deep into the lungs**

• MALATTIE RESPIRATORIE...

- Malattie allergiche
- Asma bronchiale
- Bronchiti acute e croniche
- Enfisema polmonare
- Tumori polmonari e dell'apparato respiratorio in generale





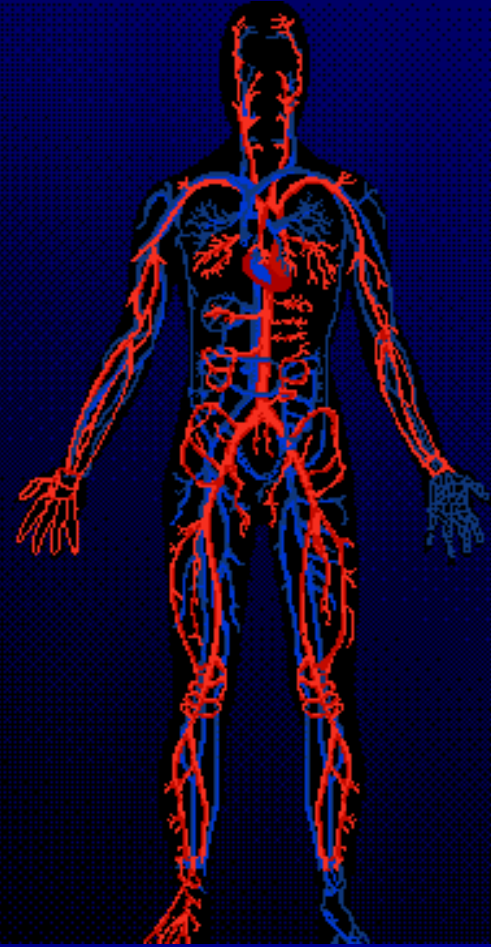
BLOOD

Nano particles are so small they can easily cross the lung membrane

Figure 1 Relation between ultrafine particles and cellular structures in the lung. Idealised particles of 10, 1, and 0.1 μm are shown compared with a bronchial epithelium; note that the top end of the range of ultrafine particles (0.1 μm, 100 nm) is not really visible. On the right are shown the same three particles relative to cell.

Nano Pathology

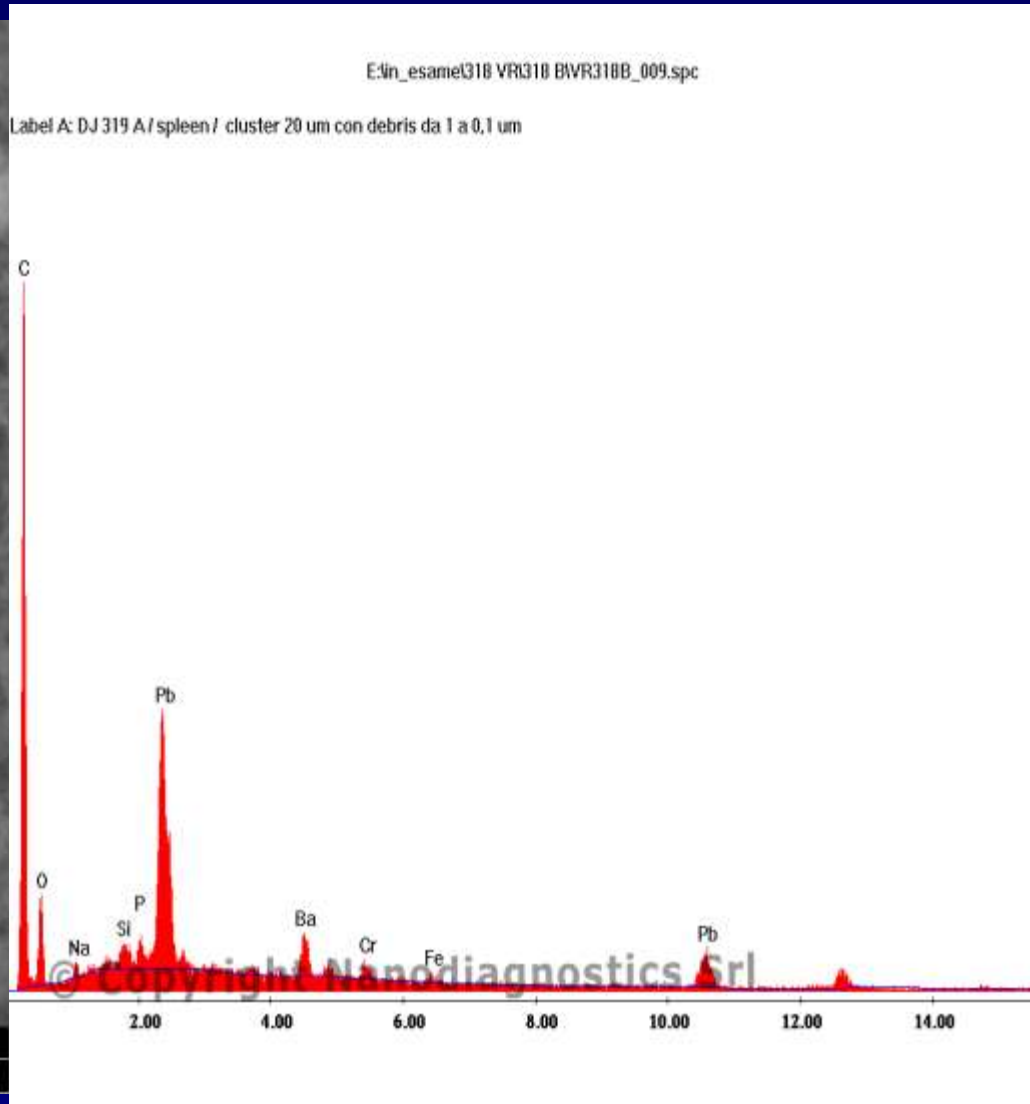
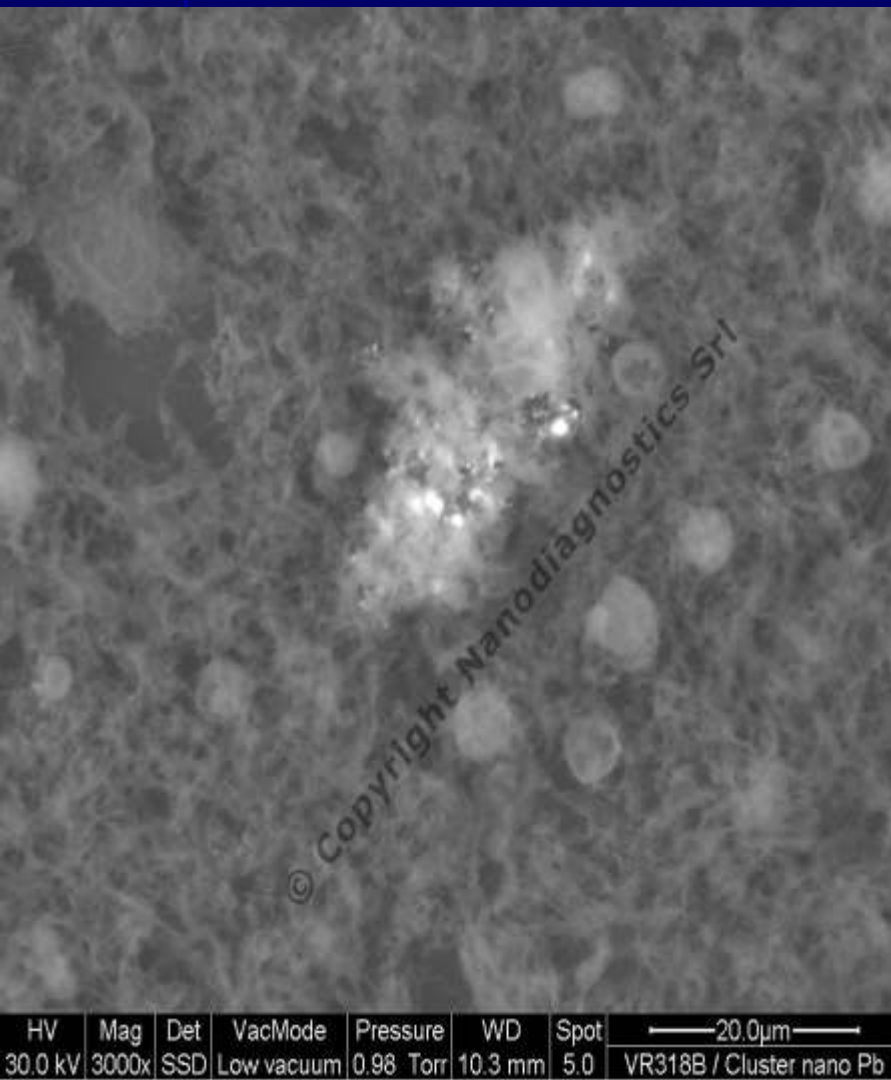
- Once nanoparticles have entered the bloodstream they can easily cross the membranes of every tissue in the body.



Nano Pathology

- They can even cross the blood brain barrier

Aggregati di Piombo, Bario, Cromo, Ferro e Silicio in Cervello.



**But even if you made
incineration safe...**

**But even if you made
incineration safe...**

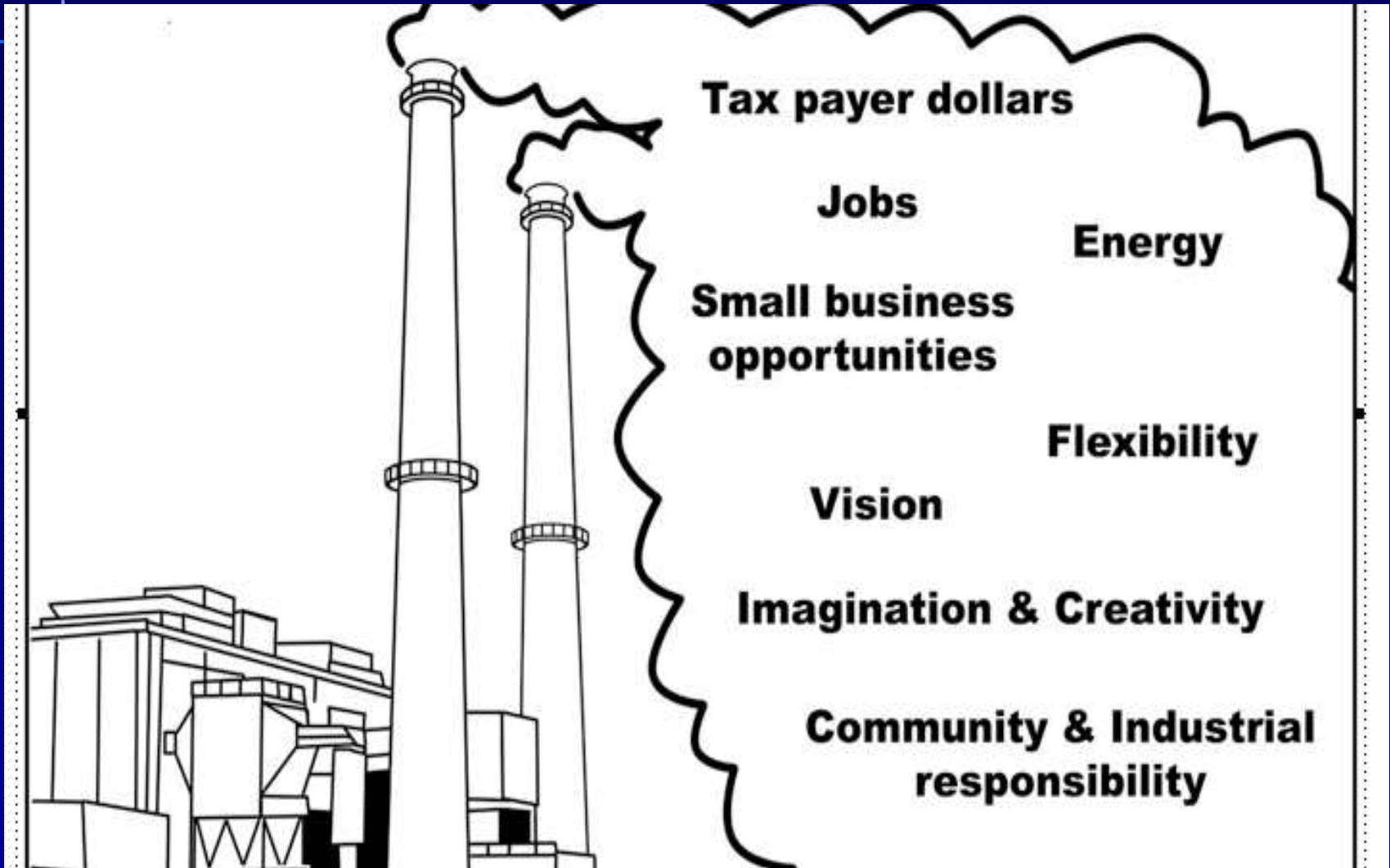
**You would never make it
sensible!**

A modern incinerator looks better, but...



**Much more goes up in incineration smoke
than toxic pollutants!**

Much more goes up in incineration smoke than toxic pollutants!



There is a better solution...

ZERO WASTE!

EXTRA SLIDES











EUROPA ZERO ZABOR

zero ez bada... zenbat?



Urteko
biltzarra
maiatzak
11 - 13







ZERO WASTE EUROPE

If you are not for Zero Waste, how much waste are you for?

Joan Marc Simon

Coordinator of Zero Waste Europe & GAIA

www.zerowasteurope.eu

www.no-burn.org



















LL	KING'S	COURT	
K	RECYCLED 45 RESIDENTS	RECYCLED 42 TAKE PART	







MATERIALS RECOVERY FACILITY

MRF

BARANGAY BALAYANG
ALAMINOS CITY, PANGASINAN

















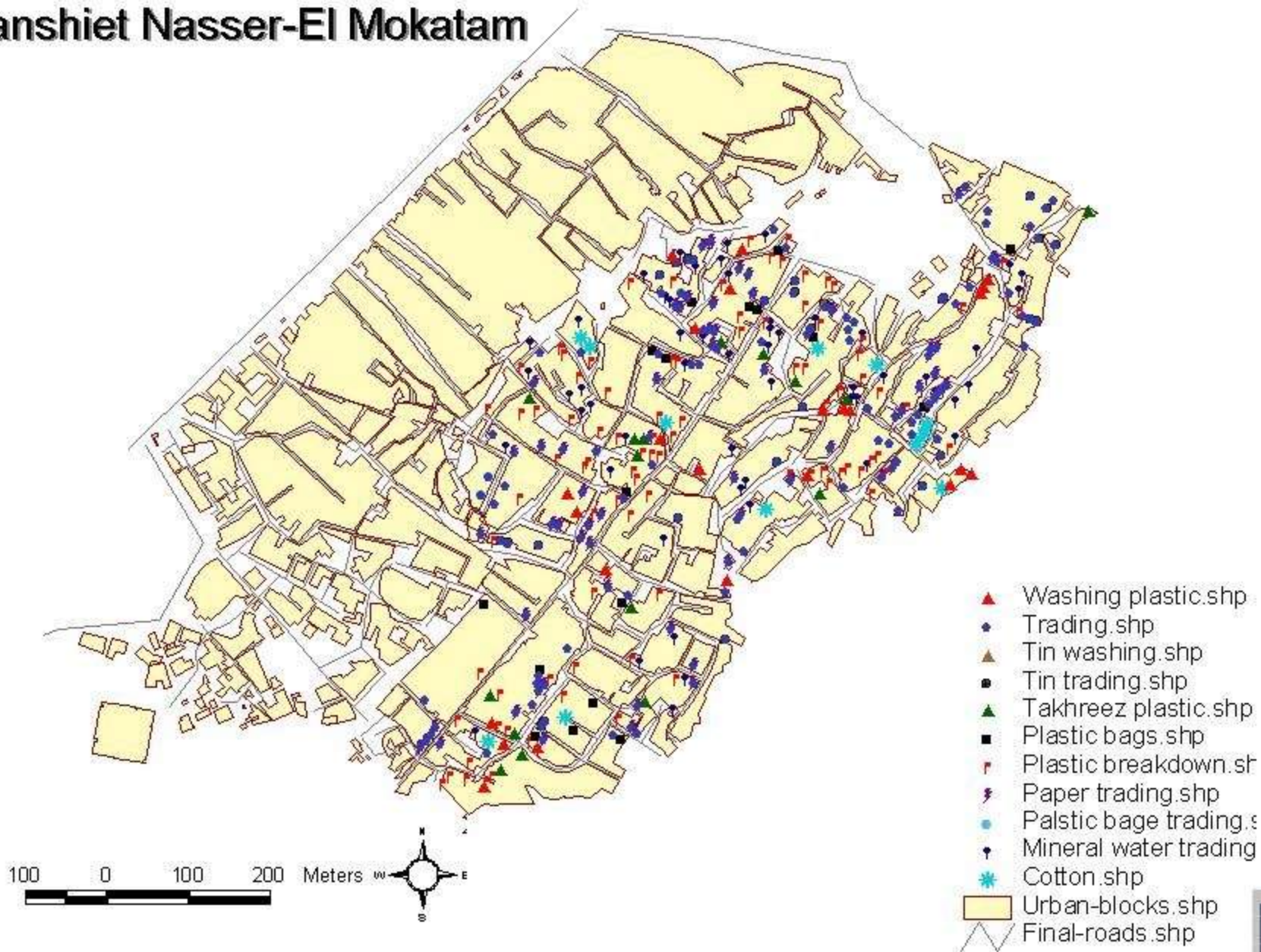








Waste Recycle Facilities Manshiet Nasser-El Mokatam





















***We need our most creative
communicators to help us
change paradigms and the false
messengers who have produced
them***

BE CAREFUL, LONE RECYCLER!

**WHEN YOU FOLLOW THE WASTE STREAM
MANY DANGERS AWAIT YOU !!!**

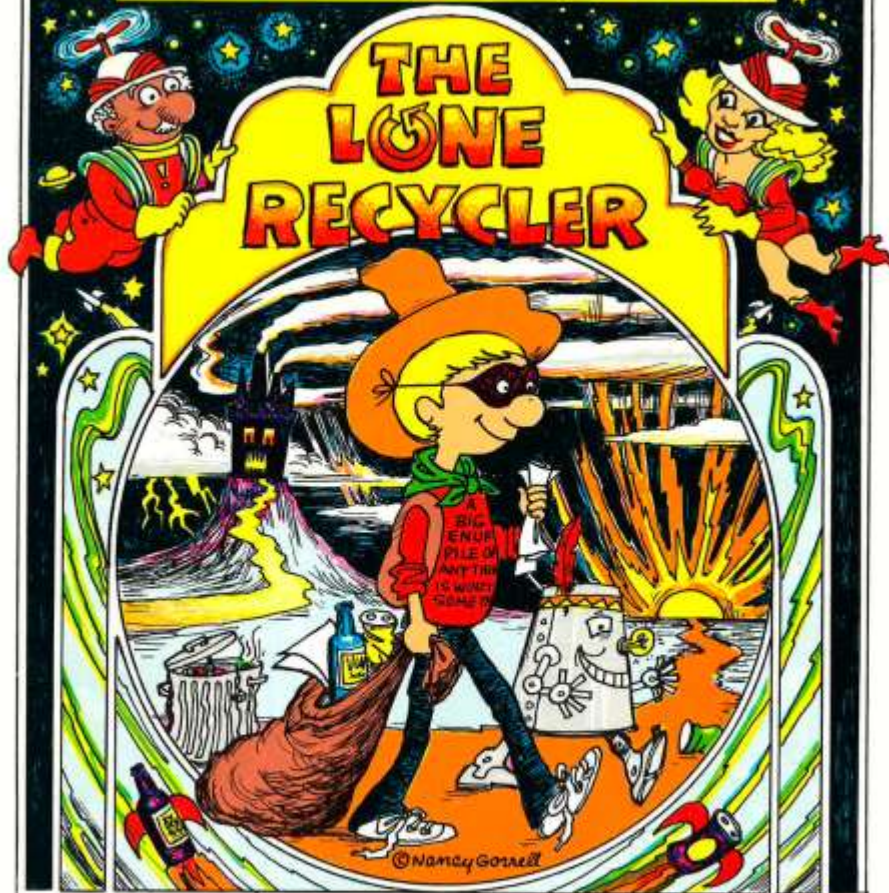


WILL YOU BE
FRIED TO A CRISP
IN ASHLY BURNS' INCINERATOR?
WHAT WILL YOUR FATE BE AT THE
HANDS OF THE POSSESSED GENIUS,
DR. FRIGHTENSTEIN? WHAT WILL HAPPEN
WHEN YOU FALL VICTIM TO THE CHARMS OF
THE VAMPISH POLYVINYL? WHEN ALL YOUR
HOPES ARE DASHED, WILL YOU ABANDON ALL
YOUR IDEALS & FRIENDS AND LEAVE SLOBBERG
FOREVER? WILL DIRTY POLITICS DEFEAT YOU?
READ ON!

R

THE LONE RECYCLER

**THE
LONE
RECYCLER**



© Nancy Gorell



rifiuti?

Guida alla raccolta differenziata
dei Rifiuti Solidi Urbani



Dal **PORTA A PORTA**
alla **TARIFFA PUNTUALE**

LAMMARI

da mercoledì
25 luglio 2012



Comune di
Capannori



Fighting Overconsumption

By the time a high school student leaves school, he or she will have watched over 350,000 TV commercials.

*Paul Hawken
The Ecology of Commerce.*

Myth versus Reality

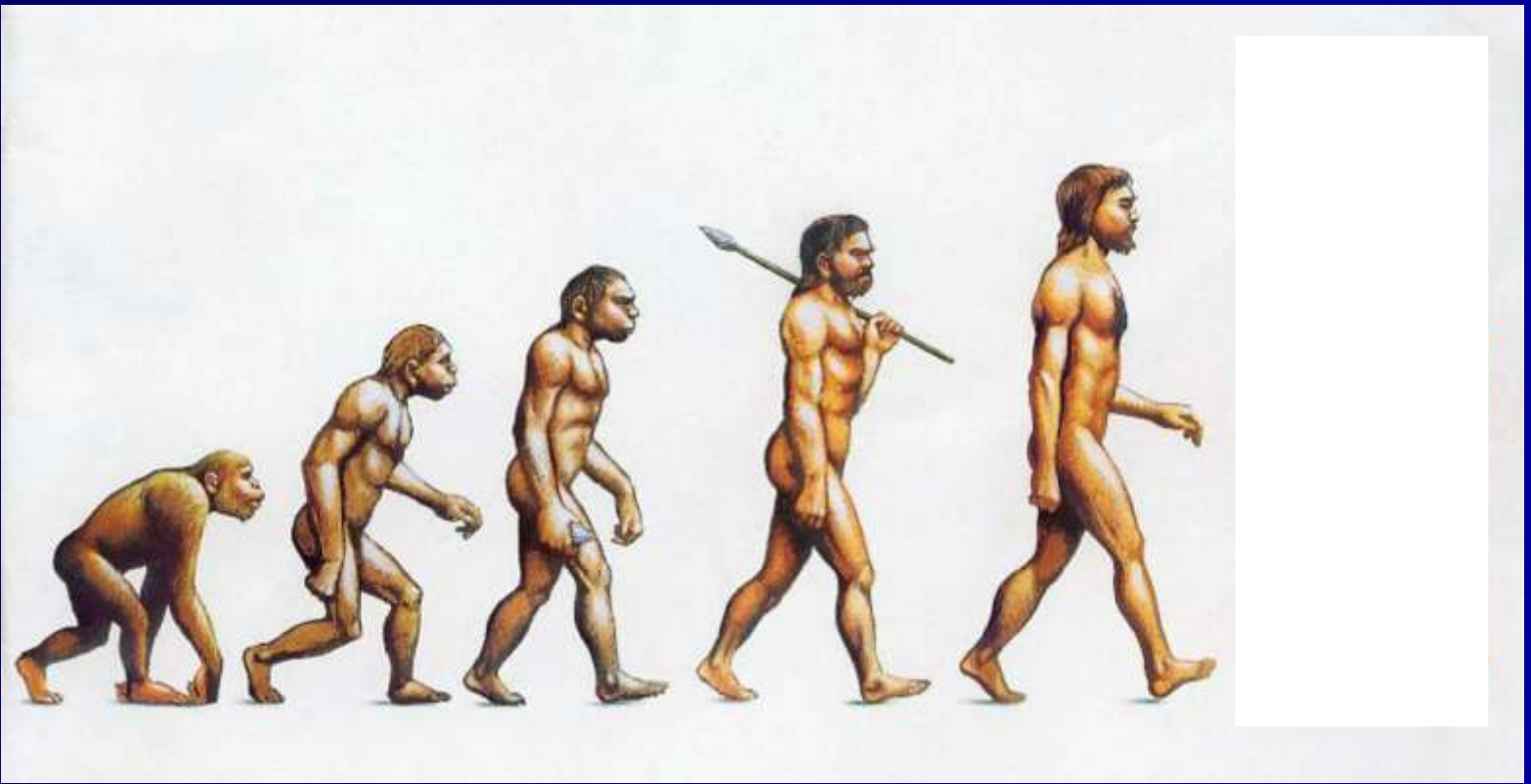
- **THE MYTH:**

- The more you consume the happier you become

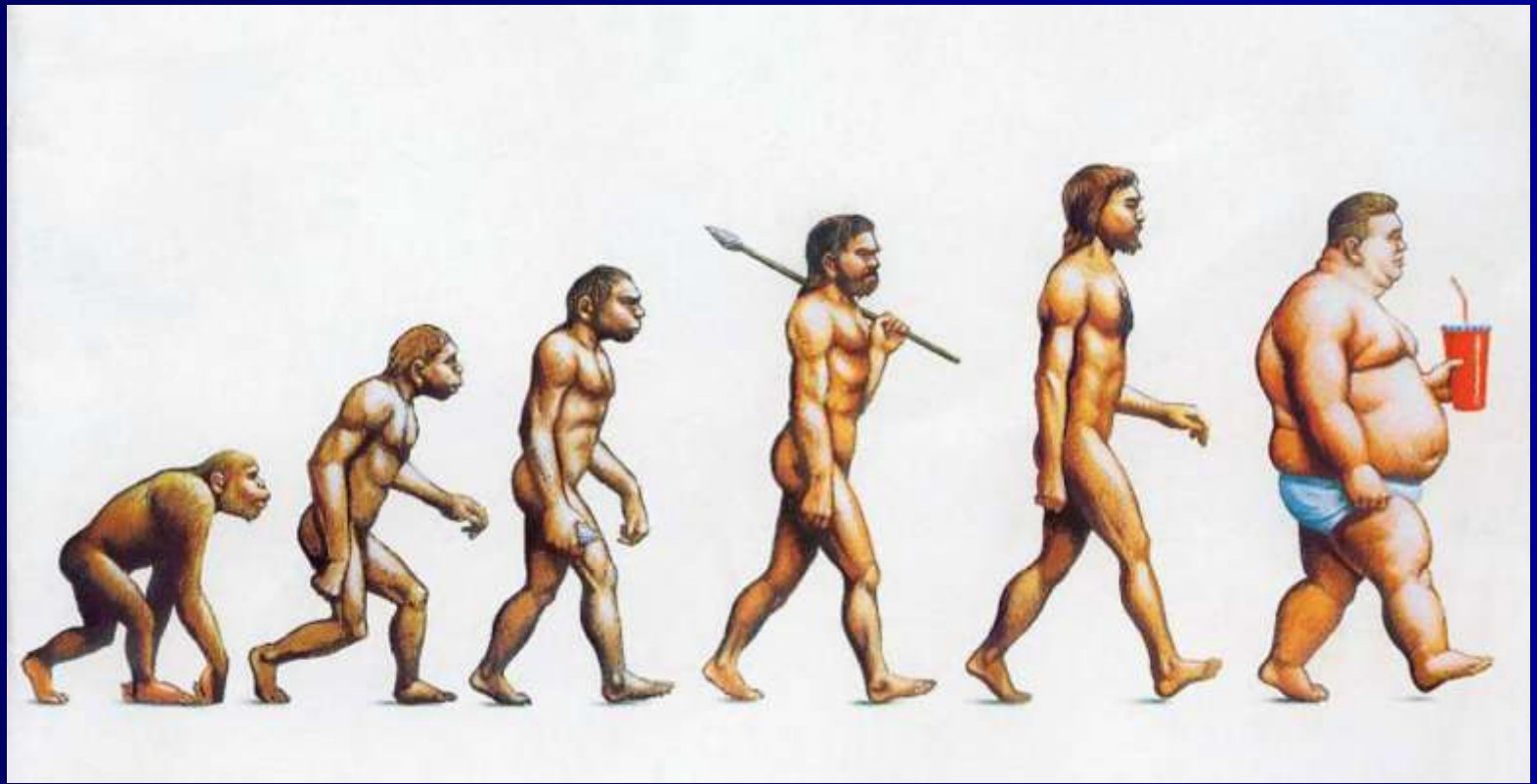
- **THE REALITY:**

- The more you consume the fatter you become!
- And the more waste you produce

Man



Modern Man!



**“The world has enough
for everyone’ s **need**
but not for everyone’ s
greed”**

Mahatma Gandhi

**We have to distinguish
between the **standard of
living** and the **quality of
life****

**We have to separate the
Quality of life from material
consumption**

We have to separate the **Quality of life** from **material consumption**

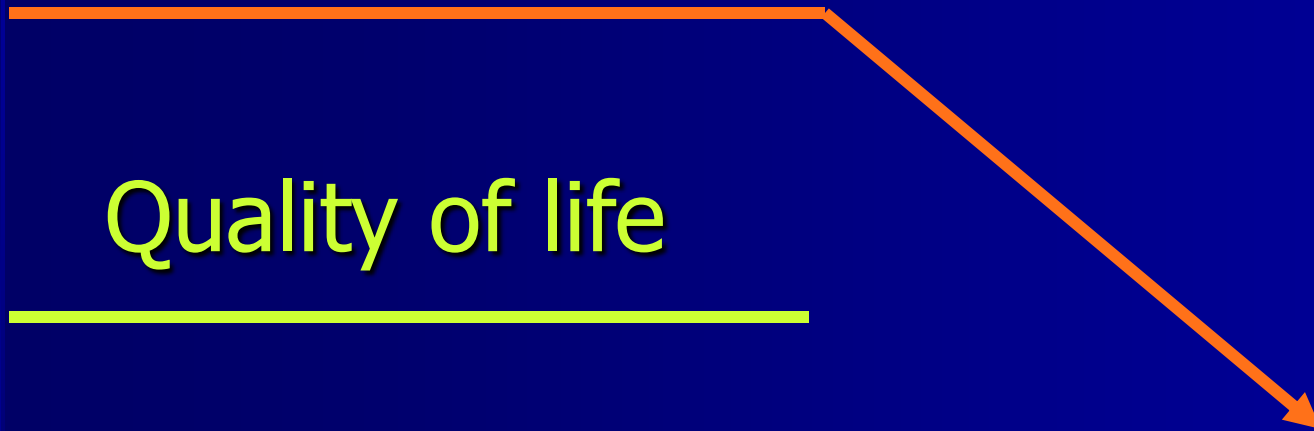
Material consumption

Quality of life

We have to separate the **Quality of life** from **material consumption**

Material consumption

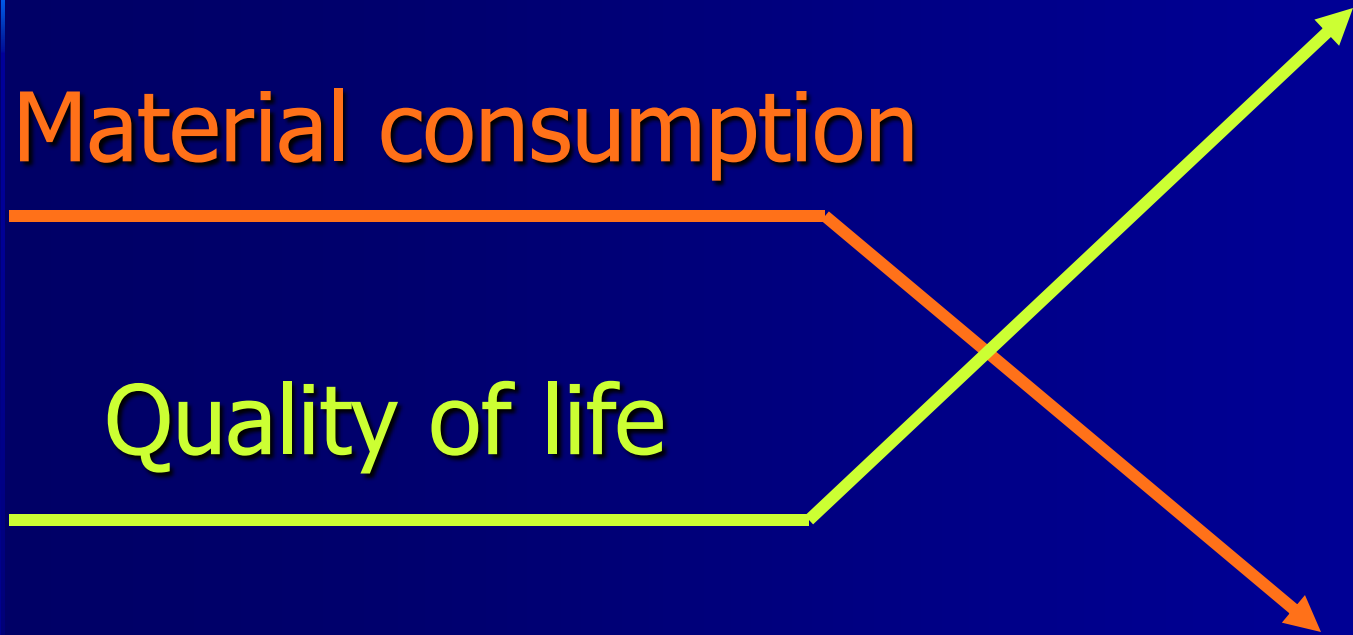
Quality of life



We have to separate the **Quality of life** from **material consumption**

Material consumption

Quality of life



**Consume less
Enjoy more!**

Less money
More meaning!

To fight over-consumption

**We need to swap a life built
around acquiring a series of
objects....**

**To a life built around a series
of expanding human
relationships**

In the
1960's

**“Make Love,
Not War”**

In the
2000's

**“Make Love,
Not Waste”**



UN GIUSTO

MAKE LOVE
NOT WASTE

Comune
www.Pes...

PARI OPPORTUNITA'
une di Capa...

In the
2000's

**“Make Friends,
Not Waste”**