Eastern Creek Incinerator
IAC

The Incinerator Proposal at Eastern Creek fails to meet the basic principles of the NSW Energy from Waste Policy Statement

- Our community survey of 1200 people shows 98.3% of people surveyed were opposed to the Incinerator.
- 12,000 People signed petitions to the Legislative Council and Legislative Assembly against the Incinerator going ahead
- This proves, Community acceptance to operate has not been obtained.

The Incinerator fails to meet the basic principles of The Renewable Energy (Electricity) Act 2000

- The act specifically excludes fossil fuel based materials such as plastics, while the proposal at Eastern Creek would burn plastics. Burning waste fuels based on petrochemicals, which are fossil fuels, and burning plastics derived from fossil fuels does not create "green" energy - it is simply burning fossil fuels in another form and is therefore in breach of the Act.

The Incinerator fails to meet the basic principles of the "European Human Rights Convention"

- Waste to Energy Incinerators contravene basic human rights as stated by the United Nations Commission on Human Rights
- The foetus, infant and child are most at risk from incinerator emissions: their rights are therefore being ignored and violated, which is not in keeping with the concept of a just society. Nor is the present policy of locating incinerators in deprived areas where their health effects will be maximal

The Incinerator fails to meet the basic principles of the "Stockholm Convention on Persistent Organic Pollutants"

- The Stockholm Convention is a legally binding international instrument that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).
- Waste to Energy Incineration goes directly against the directive of the Stockholm Convention by releasing persistent organic pollutants (POPs) such as Dioxin and Furans into the environment.

The Incinerator Proponent fails to meet the "Fit and proper person test under section 83 of the "Protection of the Environment Operations Act"

- The proponent has had 18 EPA breaches of associated companies since 2005.

- The proponent has contravened environment protection legislation making him an unfit person under the Act.

The Incinerator will produce ultra-fine particulates

- The proponents EIS states that “ultra-fine particulates will increase as a result of of this project”
- Ultrafine particulates are particulate matter of nanoscale size (less than 0.1 μm or 100 nm in diameter).[1] Regulations do not exist for this size class of ambient air pollution particles. They are much smaller than the regulated PM_{10} and $PM_{2.5}$ particle classes and are believed to have several more aggressive health implications than those classes of larger particulates.

A Government Health Study proves ultrafine particulates kill more people each year than traffic accidents

The National Environment Protection Council released a health study on the 3rd August 2017 that showed:

- Sydney residents have their lives reduced by an estimated 72 days for men and 65 days for women by breathing in fine particulate pollution based on 2008 exposure levels (And this is before an incinerator is built)
- The report showed 520 deaths in Sydney every year are caused by fine particulate pollution, more people than traffic accidents.

Failure of Waste to Energy Incinerator filters

Information submitted to the UK East Sussex, Brighton & Hove Local Plan Public Inquiry in 2003 by Veolia confirms Incinerator baghouse filter collection efficiency for ultra fine particulates is only 5-30%.

This proves 70- 95% of these ultrafine particulates will be released into the air if the Incinerator at Eastern Creek goes ahead.

Source - Failure of Waste to Energy Incinerator filters
(Howard C.V. The health impacts of incineration. Baker N, Proof of Evidence submitted to East **95-99%** for PM10s - **65-70%** for PM2.5s - **5-30%** for particles smaller than 2.5 microns)

https://books.google.com.au/books?id=3azaAAAAQBAJ&pg=PT61&lpg=PT61&dq=Proof+of+Evidence+submitted+to+East+Sussex+and+Brighton+and+Hove+Local+Plan+Public+Inquiry,+2003&source=bl&ots=Yidh6Oxu4U&sig=F8pnSrX0amAVDA5nqc9W7V55FRc&hl=en&sa=X&ved=0ahUKEwi8vb73if_aAhUBwrwKHRhVDIcQ6AEIRTAF#v=snippet&q=Baker%20N%202003%20Proof%20of%20Evidence&f=false

Many studies show communities all around the world, living close to incinerators - even modern facilities, suffer higher rates of cancer and respiratory problems

- The “Paris Appeal Memorandum”, supported by the European Standing Committee of Doctors (representing 2 million doctors), urged a moratorium on building any new incinerators due to health concerns. (www.artac.info/static.php?op=MemorandumParisAppeal.txt&npds=1).
- A study completed by George Thurston in November 2017 found that living near a waste to energy incinerator carries the same health risks as secondhand cigarette smoke. “The increase in lung cancer from long-term exposure to fine particulate matter is roughly the same as the increase in lung cancer of a non-smoker who breathes passive smoke while living with a smoker, or about 20 % increase in lung cancer risk”. http://www.cbf.org/document-library/cbf-reports/thurston-wheelabrator-health-impacts-2017.pdf
- A study published recently in the American Medical Association's Jama Pediatrics journal is the first to examine the impact of ultrafine particulates on health. It found an increase in PM1 of 10 micrograms per cubic metre over the entire pregnancy led to a 9% increased risk of a preterm birth.

https://www.smh.com.au/environment/exposure-to-fine-particulate-pollution-linked-to-increase-in-early-births-study-20180102-h0cges.html

We don’t want our children & grandchildren breathing in Incinerator emissions 24/7 for the next 30 years.

- There are 15 schools, and 6 preschools surrounding the incinerator site with the closest preschool only 800m away.
- Homes and workplaces are only 800m from the Incinerator site.

All the way through this Incinerator development process every important meeting has been on a work day, making it impossible for people to attend.

- The site visit to Dial a dump was on a work day with only 1 days notice, making it impossible for people to attend
- Todays Public Meeting is also on a work day making it impossible for everyone to be here.

No Incinerator for Western Sydney was setup to represent the wishes of everyone in Western Sydney who are against this Incinerator going ahead.

I would like to share comments from people who were unable to be here today and speak.

Mr Hummel from Blacktown said;

“We will have to move, we have complex health issues and the exposure means that we will have to relocate at considerable expense and will force us out of the Sydney Basin as the plumes and the danger of this malfunctioning is too high.”

Joanne from Erskine Park said;
“This should never happen, the pollution alone is criminal but there are better ways of dealing with waste than polluting our air. I cannot see why anyone would support this unless they were getting something from it. It should be outlawed with all the evidence of how communities throughout the world are fighting these incinerators and the health problems that are following. Why would you trust someone who is going to benefit financially from this, they will say anything to get it through.”

Deidre from St Clair said;
“The health, wellbeing and lifestyle of my children and the entire community is very important to me and the Waste To Energy Incinerator is a huge threat to the health of the whole community. We should not be in fear for anyone's health by simply sending our children to school or going for a walk. Absolutely unacceptable”.

Judy from Minchinbury said;
“I am disgusted and mortified as my grandson and myself suffer with asthma. How could you do this to little children with bronchial chest problems. Isn't their little lives hard enough? Its profits over children! I can tell you one thing it would only be a matter of time before the toxins impacted upon peoples health. Someone will be responsible to pay compensation as our properties devalue for those that have to sell and move for health reasons”.

Louise from Minchinbury said;
“This proposal scares me. Having an incinerator releasing toxic fumes 24/7 into the air so close to my home and my daughters school. I fear for the health of my family and the community”.

Stephen from Minchinbury said;
“My house will be approximately 700m in a straight line from the proposed (Incinerator) site and I am not the closest. I think it is absolutely ridiculous building it that close to houses, let alone near schools (and) catchment areas etc”.

Carolyn from Mt Druitt said;
“I'm sick to death that these companies think they can keep coming into the western suburbs to dump their rubbish on us. We won't get the protections that the rest of Sydney enjoys, probably because most people in the western suburbs actually work and don't have time to protest. We are telling you no, we don't want it and we don't want to be ignored again”.

Sandra from Erskine Park said;
“I fully oppose this proposal. It should NOT be allowed anywhere near residential areas let alone within 2kms. This is just a money making machine for (the proponent). I have a 10 and 7 year old and am scared to death for them. How can the government seriously even consider approving such a facility by a company that has many instances of breaching the EPAs guidelines?”

Paige from St Clair said;
“The proposal honestly baffles me, the potential health hazards this incinerator will produce are unacceptable and such a proposition seems to be ignoring the hopes of the public- that the western Sydney suburbs will eventually become a safe and prosperous area to live, with equal opportunities and a bright future as all Australians deserve.”

Jessica from St Clair said;
“As an asthmatic and mother of 4 with the same condition I am appalled and furious at the plans to build this filthy monstrosity. Despite being close to homes and parks it's also too close to the schools my kids attend and the majority of the kids in the area attend.”

Patricia from Mulgoa said;
“I think it is disgusting that any government would even think of approving this application. Think about the people who live around this area and the devastation it will cause.”

Belinda from Minchinbury said;
“Burning 24/7 in the immediate vicinity of densely populated residential suburbs is dangerous and frightening. The health risks alone should be enough to stop this at its conception stage, but the impact on the environment will be beyond measurement. The largest in the world; there's no precedent for the potential disastrous impacts this could have on the local environment. The same local environment where my children enjoy their local park, play soccer, go to school and live. The people do not want this. Put community before profit and stop this incinerator. ”

Lee-Anne from Minchinbury said;
“Personally I'm disgusted in the proposal and in disbelief that the government have allowed this to get so far. My home is one of the closest to this facility and for my family and communities health this (is) not acceptable. This has been my home (my) whole life. I'm extremely concerned for our health if this (incinerator) goes ahead.”

Andrew from Blacktown said;
“Such an incinerator is a health hazard purely from the perspective of potential increases in (ultrafine particulates) in the air. It is only worse when you consider the history of the (proponent) and its track record of EPA breaches. Further endangering the health of those (living) in the Western Suburbs.”

Guy works at Eastern Creek, he said;
“I currently work only meters from the proposed "pollution stacks" and can not understand how anyone could support the plan to build something that will release substances (to) atmosphere that have the potential to harm human health. My health, your health, the next generations. This stupidity has to stop”.

Melissa from Erskine Park said;
“I’m so angry about this. All my kids will be attending James Erskine Public school (less than 2km from

the site) next year and it makes me sick to my stomach that they will be breathing in (emissions) from this incinerator if it goes ahead”

Natalie from St Clair said;
“I have 2 young children under 5 and it's devastating to think that they may be at risk of being subjected to highly dangerous amounts of pollution in their daily lives. My youngest daughter already suffers allergy symptoms caused by pollutants in the air.. What will happen to her? Please don't let this go ahead.”

Peta from Erskine Park said;
“I am extremely against it as my daughter already suffers asthma and this will make her so much worse. Don't let this happen, for the safety of our children.”

Rebecca from Eastern Creek said;
“I'm disgusted and concerned, I don't want my child and my family's health affected because of this (incinerator). We need your help to stop (it) going ahead”

Helen from St Clair said;
“I can't believe that this incinerator is still being considered given its proximity to residences and Prospect Reservoir. I'm concerned about adverse health effects and medical expenses from the air pollution the incinerator would emit, as well as from the trucks bringing in the waste. The air pollution would be trapped recirculating in the Sydney Basin. I am concerned about pollution from the Incinerator contaminating Prospect Reservoir”.

Kristy from Lalor Park said;
“Incredibly angry that this company who already has breaches for environmental abuse, wants to prioritize profit over the health of people. Think about the health and well being of (our) local community, please don't mar our beautiful landscapes and environment out here with a monstrous eyesore that has no positive benefits for the residents. We don't care about being able to burn large deposits of rubbish, we care about community and the environment and the precious lives inside of them”.

Matthew from Minchinbury said;
“The state government is building real infrastructure that is good for the community - a zoo, an indoor motor cross building at eastern creek and we already have other attractions like wet n wild, prospect reservoir and featherdale which attract so many visitors.
We have schools and houses, business’ and (Prospect Reservoir) water source in close proximity. Why would anyone consider building (an Incinerator) in this area, let alone at all. It's shown that this type of technology is unfeasible and unsustainable so why consider the application, let alone 3 times. The local government, EPA and NSW health all oppose the project, surely that's an indication of how ridiculous it is”.

Venesa from Minchinbury said;
“I have cried about this a number of times and am at a loss about how many of my neighbours have

already sold their homes and moved away. I am at a loss about (why) Western Sydney residents are being treated like they are worthless. My retirements plans are over now. My beautiful home that we have just finalised after all these years has to be given up now. I can't believe how ridiculous this is and how the proposal (is) still going!

Mel from Jamisontown said;

"I feel so angry and saddened that something so toxic that will pollute the air we breathe would even be considered. My children and many other children and adults train outside at the Blacktown international sports Park many times per week and to think the future athletes of western Sydney (will) have to train in toxic (emission) filled air. These kids are the best and most talented in their field for example this sports park in Eastern creek has the Giants AFL academy, Athletics, baseball, cricket and soccer just to name a few."

This folder is full of community surveys that include many more comments from people unable to be here today. I think it proves beyond a shadow of doubt that the community surrounding the incinerator site are against the incinerator going ahead.

On behalf of the community I ask you to please cancel Dial A Dumps license to build a Waste to Energy Incinerator at Eastern Creek.

Thank you

Sydney Incinerator Project, Eastern Creek

Background

- The Government is deciding right now if they will approve The World Largest Incinerator in Sydney. It would run 24/7 for the next 30 - 50 years
- The project is called Waste to Energy but its essentially a large incinerator which burns waste products and the heat is used to generate electricity. If approved, it will be the largest of its type in the world on completion, dwarfing similar facilities already in operation in Europe and the UK.
- The Next Generation has amended their EIS three times, changing emissions data with no explanation of how their data could change.
- The Incinerator is proposed to burn 1.3 million tonnes of garbage each year on completion. (Stage 1 & 2)
- A study completed by George Thurston in November 2017 found that living near a waste to energy incinerator carries the same health risks as secondhand cigarette smoke. The increase in lung cancer from long-term exposure to fine particulate matter is roughly the same as the increase in lung cancer of a non-smoker who breathes passive smoke while living with a smoker, or about 20 % increase in lung cancer risk. http://www.cbf.org/document-library/cbf-reports/thurston-wheelabrator-health-impacts-2017.pdf
- The Sydney Incinerator would have two 100 metre smoke stacks, pumping out cancer causing emissions such as; arsenic, cadmium, nickel, Mercury, dioxin, polycyclic aromatic hydrocarbons and Persistent Organic Pollutants - 24 hours a day 7 days a week for the next 30 - 50 years.
- An independent study has confirmed the Incinerator emissions plume will be one of the largest in the world. It would travel up to 40km, putting the air quality of all Sydney residents at risk.
- Sydney's Basin shape causes it to trap pollution. In summer cool overnight air drains off the mountains and moves towards the sea picking up air pollution. Morning sea breezes then push it back over urban Sydney areas collecting more pollution and creating Sydney' smog. Imagine the addition of Incinerator emissions to this ?
- Family homes are only 800 meters from the site.
- Three schools are within 1.8km of the site.
- The Incinerator “Sacrifice Zone” includes the area within a 5km radius of the Incinerator site. The sacrifice zone is a geographic area that has been permanently impaired by environmental damage or economic disinvestment. These zones are most commonly found in low-income and minority communities.[1] Commentators including Chris Hedges, Joe Sacco, and Stephen Lerner have argued that corporate business practices contribute to producing sacrifice zones. https://en.wikipedia.org/wiki/Sacrifice_zone
- The Next Generations EIS states that “ultra-fine particulates will increase as a result of this project” and it also states “The proposed facility may release substances to

atmosphere which have the potential to harm human health" confirming this incinerator is harmful to health. When questioned about this at a community information forum, they said "Oh well one in two people die of cancer anyway"

- Prospect Reservoir is 5km from the site which forms part of the drinking water for 4.5 million people in Greater sydney (70% of NSW). Putting our drinking water under threat of contamination.
- The Incinerator will use the Blacktown local Bioretention basin to filter waste water, silt and sediment from the Incinerator. This practice would put The Hawkesbury-Nepean river system, an important natural assets and one of the largest coastal river catchments along the NSW coastline at risk. Its waters support agricultural and horticultural industries that generate more than $1 billion annually, including $259 million of irrigated agriculture which supplies much of Sydney's fresh food.
- The incinerator would produce 450,000 tonnes of toxic ash every year that still needs to be landfilled.
- The community has not given a social license to operate. Our community survey of 1200 residents confirmed 98.5% of residents are against a Waste to Energy incinerator at Eastern Creek, Sydney.

The Proposal fails to meet many Government Policies.

The Proposal fails to meet the basic principles of The NSW Energy from Waste Policy Statement

The NSW Energy from Waste Policy Statement has overarching principles including:

- 'Mass burn' disposal outcomes are avoided
- Air quality and human health are protected
- Higher value resourcerecovery outcomes are maximized
- Scope is provided for industry innovation
- Community acceptance to operate a process can be obtained (our community survey of 1200 people proves 98.5% of the community are against a waste to energy incinerator)
- This application fails to meet all of the basic principles of the NSW Energy from Waste Policy Statement

The Proposal fails to meet the basic principles of The Renewable Energy (Electricity) Act 2000

- The waste to energy incinerator would burn plastic. The Act specifically excludes fossil fuel based materials such as plastics.
- Burning waste fuels based on petrochemicals (which are fossil fuels) and burning plastics derived from fossil fuels does not create 'green' energy – it is simply burning fossil fuels in another form.

The Proposal fails to meet the basic principles of The European Human Rights Convention

- Waste to Energy Incinerators presently contravene basic human rights as stated by the United Nations Commission on Human Rights
- The foetus, infant and child are most at risk from incinerator emissions: their rights are therefore being ignored and violated, which is not in keeping with the concept of a just society. Nor is the present policy of locating incinerators in deprived areas where their health effects will be maximal

The Proposal fails to meet the basic principles of The Stockholm Convention on Persistent Organic Pollutants

Waste to Energy Incinerators are known to produce Persistent Organic Pollutants such as Dioxin and Furans, which are Persistent Organic Pollutants (POPs).
http://www.ntn.org.au/wp/wp-content/uploads/2014/10/10-reasons-why-burning-waste-to-make-energy-is-a-bad-idea.pdf

- The Stockholm Convention is a legally binding international instrument that aims to eliminate or restrict the production and use of persistent organic pollutants (POPs).

- Waste to Energy Incineration goes directly against the directive of the Stockholm Convention by releasing POPs into the environment.

POPs concentrate in living organisms through another process called bioaccumulation. Though not soluble in water, POPs are readily absorbed in fatty tissue, where concentrations can become magnified by up to 70,000 times the background levels. Fish, predatory birds, mammals, and humans are high up the food chain and so absorb the greatest concentrations.
https://www.un.org/press/en/2004/unep204.doc.htm

Doesn't meet the fit and proper person test under section 83 of the Protection of the Environment Operations Act

- The proponent has had 18 EPA breaches of associated companies since 2005. Averaging at over 1 breach per year.
- The owner of The Next Generation has contravened environment protection legislation making him an unfit person.

Current Government Website confirms health concerns

Waste to Energy Incinerators are known to produce ultra-fine particulates (diameter less than 0.1μm) in high amounts.
http://www.ntn.org.au/wp/wp-content/uploads/2013/11/NTN-waste-to-energy-incineration-report-2013.1.pdf

- Exposure to fine particle pollution has been linked to a variety of health problems including increased respiratory symptoms (e.g. irritation of the airways, coughing or difficulty breathing), heart problems and premature death in people with heart or lung disease." http://www.environment.nsw.gov.au/topics/air/air-pollution/particles-as-pollution
- "May cause people with heart disease to experience symptoms like chest pain, and shortness of breath. Particle pollution can aggravate existing respiratory diseases such as asthma and chronic bronchitis". http://www.environment.nsw.gov.au/topics/air/air-pollution/indicators-we-monitor
- **The Next Generation own EIS confirms "Ultra fine particulates will increase as a result of this project"**

Health Effects of Waste to Energy Incineration

Short-term exposure can lead to:

- Irritated eyes, nose and throat
- Worsening asthma and lung diseases such as chronic bronchitis (also called chronic obstructive pulmonary disease or COPD)
- Heart attacks and arrhythmias (irregular heartbeat) in people with heart disease
- Increases in hospital admissions and premature death due to diseases of the respiratory and cardiovascular systems

Long-term exposure can lead to:

- Reduced lung function
- Development of cardiovascular and respiratory diseases
- Increased rate of disease progression
- Reduction in life expectancy
- Irritation and inflammation of eyes, nose, throat and lower airways: coughing, sore and scratchy throat or uncomfortable feeling in chest
- Reduced lung function: not able to breathe as deeply or vigorously as you normally would
- Exacerbation of asthma and chronic respiratory diseases such as chronic bronchitis (also called chronic obstructive pulmonary disease or COPD)
- Increased susceptibility to respiratory infections

- Can continue to damage lungs when symptoms have disappeared
- Flu-like symptoms such as headaches, dizziness, disorientation, nausea and fatigue
- Chest pain in people with coronary heart disease
- At higher concentration: impaired vision and coordination, dizziness and confusion
- Potentially serious health effects on unborn babies (birth defects) when exposed to high levels
- Narrowing of the airways leading to wheezing, chest tightness and shortness of breath
- More frequent asthma attacks in people with asthma
- Exacerbation of cardiovascular diseases

Studies confirm Health Effects of Waste to Energy Incineration

- A study by Dr George D. Thurston of New York University School of Medicine in November 2017 found that living near a waste to energy incinerator carries the same health risks as secondhand smoke. "The increase in lung cancer from long-term exposure to fine particulate matter is roughly the same as the increase in lung cancer of a non-smoker who breathes passive smoke while living with a smoker, or about 20 % increase in lung cancer risk".

- A recent study that looked into a medium sized city in southwestern Sweden, clearly identified their new modern incinerator as the single most significant source of PM2.5's. http://senedd.cynulliad.cymru/documents/s7994/Yr%20Athro%20Vyvyan%20Howard%20Papur%202.pdf

- A study published recently in the American Medical Association's Jama Pediatrics journal is the first to examine the impact of particles of 1 micrometre (PM1) – a millionth of a metre – or smaller on health. It found an increase in PM1 of 10 micrograms per cubic metre over the entire pregnancy led to a 9% increased risk of a preterm birth. This research confirms - There is no safe concentration of fine particle pollution.

- Two large American studies confirm that Waste to Energy Incinerators increase particulates therefore increasing the risk to health. The studies proved that fine (PM2.5) particulate air pollution causes increases in all-cause mortality, cardiovascular mortality and mortality from lung cancer, after adjustment for other factors. A more recent, well-designed study of morbidity and mortality in postmenopausal women has confirmed this, showing a 76% increase in cardiovascular and 83% increase in cerebrovascular mortality in women exposed to higher levels of fine particulates. These fine particulates are primarily produced by combustion processes and are emitted in large quantities by

incinerators.

- L M Brown and his colleagues have pointed out that “long-term exposure to even low concentrations of fine particles may be associated with reduced life expectancy” [Brown L.M., Collings N., Harrison R.M., Maynard A.D. and Maynard R.L. Ultrafine particles in the atmosphere: introduction. Philosophical Transactions of the Royal Society of London A 358 (2000) 2563-2565].

- The Environmental Protection Agency cites health studies indicating that particles smaller than 2.5 micrometers (PM2.5) (and emitted from Incinerators) are “the major contributor to serious health problems like respiratory illness and premature mortality” [http://www.crwi.org/textfiles/partem.htm]

- Another recent study (Mao, et al. 2007) found that the concentrations of PM2.5 and PM10 in the study area located downwind of the incinerator were significantly higher (between 220% and 700% higher) than the study area upwind of the incinerator. The study indicated that the air had “significant contamination by air pollutants emitted” from a waste incinerator, representing a public health problem for nearby residents, despite the facility being equipped with a modern air pollution control system.

- Many studies, old and new, show that communities all around the world, living close to incinerators, even modern facilities, suffer higher rates of cancer and respiratory problems (e.g. http://tinyurl.com/y7dteo). The recently released Paris Appeal Memorandum, supported by the European Standing Committee of Doctors (representing 2 million doctors), urged a moratorium on building any new incinerators (www.artac.info/static.php?op=MemorandumParisAppeal.txt&npds=1).

- This study “Toxic ash contaminates our food supply”’ Ash and other residues from waste incineration contain dioxins, furans (PCDD/Fs) and a range of other highly toxic POPs at levels which are a threat to human health and the environment. Current management practices and regulatory threshold levels for POPs that contaminate incinerator residues are not preventing releases of POPs into agricultural settings, the food chain and the broader environment.
  http://ipen.org/sites/default/files/documents/ipen-toxic-fly-ash-in-food-v1_4a-en-web.pdf

- The study “Public health impacts associated with incinerators – a compilation” results support the hypothesis of a statistically significant higher risk, among men and women alike, of dying from all cancers in towns situated near incinerators and hazardous waste treatment plants, and specifically, a higher excess risk in respect of tumors of the stomach, liver, pleura, kidney, and ovary. Furthermore, this is one of the first studies to analyze the risk of dying of cancer related with specific industrial activities in this sector at a national level, and to highlight the excess risk observed in the vicinity of incinerators and installations.
  https://zerowasteoz.org.au/wp-content/uploads/2017/12/Public-health-impacts-associated-with-incinerators.pdf

- A recent study by The Small Area Health Statistics Unit has revealed and area in Dundee, Scotland, near a waste incinerator has one of Europe's largest cancer clusters. There were 81 more cases of non-Hodgkin's lymphoma than average and evidence of clustering for myeloid leukemia, around the incinerator. https://www.whatdotheyknow.com/request/matters_relating_to_the_incinera

It is now established beyond reasonable doubt that particulate air pollution causes death by various means.

Research shows these include:

- Cardiovascular morbidity and mortality [Miller K.A., Siscovick D.S., Sheppard L., Shepherd K., Sullivan J.H., Anderson G.L. and Kaufman J.D. Long-term exposure to air pollution and incidence of cardiovascular events in women. New England Journal of Medicine 356 (2007) 447-458]

- Cardiopulmonary mortality [Pope C.A. Mortality effects of longer term exposures to fine particulate air pollution: review of recent epidemiological evidence. Inhalation Toxicology 19 (2007) 33-38]

- Respiratory, immunological, haematological, neurological and reproductive / developmental problems, sometimes with long time-lags between exposure and health effects [Curtis L., Rea W., Smith-Willis P., Fenyves E. and Pan Y. Adverse health effects of outdoor air pollutants. Environment International 32 (2006) 815-830]

- Every 10 µg/m3 increase in fine particulate levels was associated with a 4% increase in deaths from all causes, a 6% increase in deaths from cardiopulmonary illness and an 8% increase in lung cancer mortality [Pope C.A., Burnett R.T., Thun M.J., Calle E.E., Krewski D., Ito K. and Thurston G.D. Lung cancer, cardiopulmonary mortality, and long-term exposure to fine particulate air pollution. Journal of the American Medical Association 287 (2002) 1132-1141]

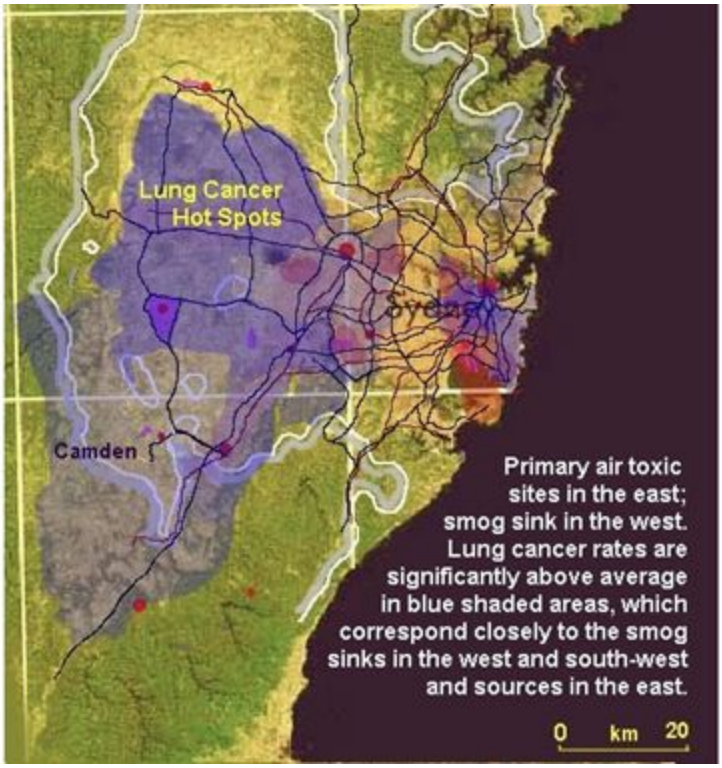
- There is particular concern about the effects of particulate pollution on infants. Increases in infant deaths from respiratory causes with a 10 µg/m3 increase in PM2.5s have been identified [Woodruff T.J., Darrow L.A. and Parker J.D. Air pollution and postneonatal infant mortality in the United States, 1999-2002. Environmental Health Perspectives 116 (2008) 110-115]

- A 10 µg/m3 increase in PM2.5s was related to a 5% increase in the risk for wheezing bronchitis [Pino P., Walter T., Oyarzun M., Villegas R. and Romieu I. Fine particulate matter and wheezing illness in the first year of life. Epidemiology 15 (2004) 702-708]

The health risk assessment of air pollution in Australia report

On 3rd August 2017 a health study was published by the National Environment Protection Council that stated;

- “Ongoing exposure to air pollution will cut months from the life expectancy of Sydneysiders”
- Long-time city residents will have their lives reduced by an estimated 72 days for men and 65 for women by ongoing inhalation of fine particle pollution.
- Particulate pollution causes an estimated 520 deaths in Sydney every year, based on exposure to 2008 levels, as well as being linked to cardiovascular and asthma hospitalisations.
- Sydney's air kills more people than traffic accidents.
- A study published in the *Environmental Research Letters* journal found that 2.1 million people died prematurely each year because of fine particle pollution, particles less than 2.5 micrometres in diameter. Most deaths were from cardiopulmonary disease and a smaller percentage from lung cancer.



Failure of Waste to Energy Incinerator filters

Information from a multi-national waste management company (Veolia) confirms Incineration baghouse filter collection efficiency as the following;

- 95-99% for PM10s
- 65-70% for PM2.5s
- 5-30% for particles smaller than 2.5 microns

Howard C.V. The health impacts of incineration. Proof of Evidence submitted to East Sussex and Brighton and Hove Local Plan Public Inquiry, 2003

These Incineration filter bags tear. The Sunday Herald (Scotland) discovered a major incident on 19 June 2001 which lead to Dundee Energy Recycling Limited filing a formal report with Scottish Environment Protection Agency (SEPA). “A spokesman for SEPA said that a lot of black dust had poured from the incinerator for an hour after filter bags suddenly burst. The pollution emission dials went off-scale, so there were no readings for the amounts that were discharged. The incinerator was shut down and the operators are trying to find out why the filter bags, which were new, had failed”

Recycling creates more jobs than Incineration

Burning waste requires a lot of money but very little workforce. This means that incineration facilities create almost no jobs.

On the contrary, recycling benefits the whole economy by creating at least ten times more jobs than landfilling or incineration.

Website quoted & more examples
https://zerowasteeurope.eu/2017/09/4-reasons-why-recycling-is-better-than-incineration/

10,688 Voters Against an Incinerator for Sydney

No Incinerator for Western Sydney have spoken to 10,688 people, face to face, about the proposal for a Waste to Energy Incinerator in Sydney.

- 10,688 people have signed petitions to the Legislative Assembly and the Legislative Council because they are against a Waste to Energy Incinerator in Sydney.
- The Sydney community do not want the Waste to Energy Incinerator to be approved and are willing to do whatever it takes to stop it going ahead.

Map of Incinerator Site (Yellow) showing surrounding communities and Prospect Reservoir, which forms part of our drinking water catchment for 4.5 million people in Greater Sydney.

Waste to Energy Incinerator Accidents and shutdowns

All around the world there are many accidents with waste to energy incinerators. Resulting in fires, explosions, and even death to workers;

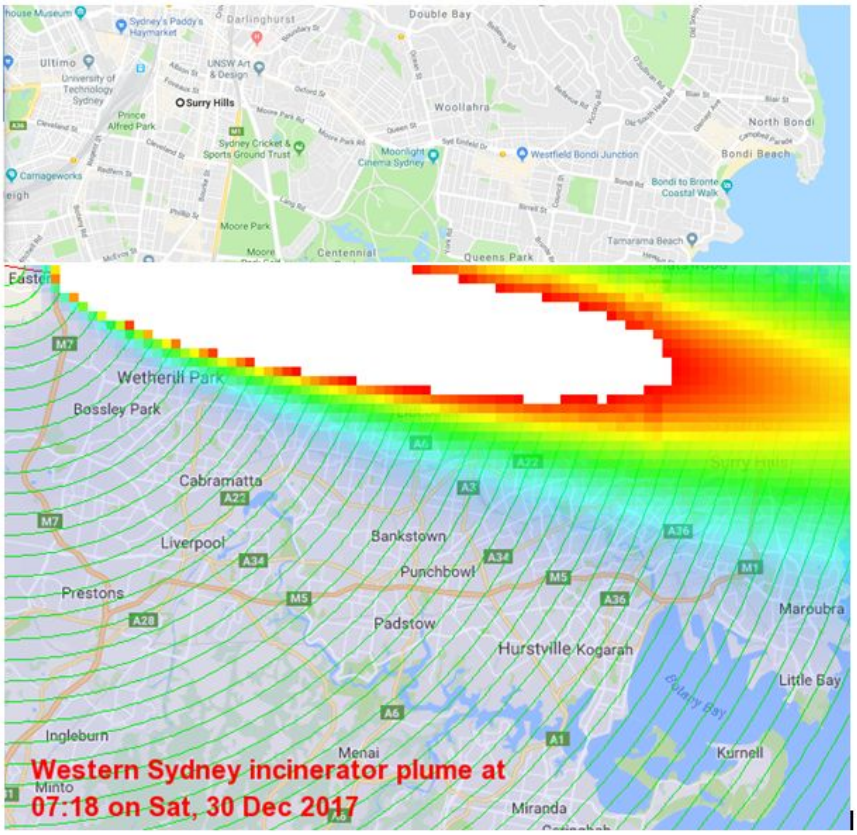
- 5/10/2016 Explosion at Waste to Energy Incinerator results in two employees critically injured https://www.kxly.com/news/local-news/spokane/waste-to-energy-plant-accident-victims-remain-in-critical-condition_20161121034342721/176401413
- 9/08/2017 One man died and two others were critically injured, after an explosion at a waste to energy plant in West Midlands town of Oldbury https://resource.co/article/man-dies-after-oldbury-recycling-plant-explosion-12022
- 29/02/2016 Explosion and fire at Waste to Energy Incinerator in Belgium https://www.endswasteandbioenergy.com/article/1385497/explosion-fire-efw-facility
- 8/06/2017 Eleven hospitalised after an uncontrolled release of a cloud of Lime at Waste to Energy Incinerator in Dublin https://www.irishtimes.com/news/ireland/irish-news/eleven-hospitalised-after-incident-at-dublin-s-poolbeg-incinerator-1.3112097
- 20/01/2013 An energy from waste plant in Scotland was closed down after an explosion and for releasing cancer-causing dioxins up to two-and-a-half times permitted levels http://www.heraldscotland.com/news/13088864.Pioneering_waste_plant_faces_legal_action_after_pollution_leaks_and_an_explosion/
- 2/12/2012 Fire at Waste-to-Energy Incinerator in Panama City, Florida.http://rapperport.com/case-studies/waste-to-energy-incinerator-fire
- 16/09/2016, a fire in the waste incinerator bunker caused poisoning of one person by hazardous fumes. https://www.presseportal.de/blaulicht/pm/116234/3431946

- 23/01/2013 Waste to energy incinerator in Kocaeli burned down. One of the firemen had to be hospitalised, the others were medically treated because they inhaled toxic exhalations during the fire fighting. https://www.memurlar.net/haber/331644/
- Fire at Crymlyn Burrows Giant Incinerator where houses nearby and downwind were contaminated by dioxin http://ukwin.org.uk/2010/02/14/another-fire-at-crymlyn-burrows/
- Many more Waste to Energy Incinerator accidents listed on this interactive map http://english.arnika.org/ipen-cee/waste-incinerators-accidents

Sydney's Basin shape would trap Incinerator pollution

- Sydney's Basin shape traps pollution
- In summer cool overnight air drains off the mountains and moves towards the sea picking up air pollution.
- Morning sea breezes then push it back over urban Sydney areas collecting more pollution and creating Sydney' smog.
- The Incinerator Plume Plotter report attached confirms; on completion, Eastern Creek Incinerator would have one of the largest emissions plumes in the world.

- The Incinerator Plume Plotter report attached confirms emissions will travel a radius of up to 40km from the site depending on wind direction
- Sydney's Basin shape makes Sydney an unsuitable site for a waste to energy incinerator
- As you can see below on the 30/12/2017, if the Incinerator was running the emissions would of traveled from Eastern Creek through the Sydney CBD then out to Bondi. The white area shows concentrations above 0.9µg/m3 of NO2 or 1.29µg/m3 of NOx.



Western Sydney' High Temperatures would increase pollution

The summer of 2017-2018, has seen temperatures in the western suburbs 10-12 degrees higher than the rest of Sydney.

Air quality decreases during times of hot temperatures because the heat and sunlight essentially cook the air along with all the chemical compounds lingering within it. This chemical soup combines with the nitrogen oxide emissions present in the air, creating a "smog" of ground-level ozone gas. This makes breathing difficult for those who already have respiratory ailments or heart problems and can also make healthy people more susceptible to respiratory infections

Increased Pollution from additional Cars and Trucks causing ground level Ozone

We already have the worst air quality in Sydney. There are already days where the EPA warns people living in Sydney with respiratory problems to stay inside. The Incinerator would require an additional 504 trucks and 110 cars on the road per day.
On the 23/02/17 between 15:00 and 17:00 St Marys (which is the closest monitoring station to the Incinerator site) reported Ozone levels exceeding national air quality standards.
The St Marys air monitoring stations have recently been switched off as there are no current results.

Air quality data

Air quality data for NSW is displayed using the Air Quality Index (AQI) scale and is updated hourly.

The Vineyard monitoring site has been decommissioned and there will be no data until a new site is established.

NSW map | Upper Hunter map | Newcastle map | NSW index values | Sydney forecast | Alerts | Subscribe

Thursday
23 February 2017
3 - 4 pm (AEST)
Previous | Next | Select
Show index values

VERY GOOD | GOOD | FAIR | POOR | VERY POOR | HAZARDOUS

Pollutants		Ozone O3	Ozone O3	Nitrogen dioxide NO2	Visibility NEPH	Carbon monoxide CO	Sulfur dioxide SO2	Particles PM10	Particles PM2.5
Averaging Periods		1-hour average	rolling 4-hour average	1-hour average	1-hour average	rolling 8-hour average	1-hour average	rolling 24-hour average	rolling 24-hour average
Sydney East	Randwick	2.8	2.9	0.1	0.20		0.0	22.9	
	Rozelle	3.0	3.0	0.7	0.17	0.1	0.1	20.3	5.9
	Lindfield	3.6	4.0	0.4	0.18		0.1	19.2	
	Chullora	4.3	4.3		0.20		0.1	24.4	7.6
	Earlwood	2.9	3.1	0.9	0.20			20.2	5.2
Sydney North-west	Richmond	7.5	5.7	0.3	0.21		0.2	21.2	7.3
	St Marys	9.1	8.0		0.29			22.9	7.5
	Vineyard								
	Prospect	7.1	7.2	0.7	0.23	0.0	0.2	23.2	5.4
Sydney South-west	Bargo	8.1	6.6	0.4	0.27		0.1	20.6	6.8
	Bringelly	8.2	7.4	0.9	0.28		0.2	36.2	7.6
	Camden	8.1	7.2	1.0	0.33	0.1		23.8	9.7
	Campbelltown West	7.2	6.7	1.1	0.28	0.3	0.2	25.9	9.1
	Liverpool	5.9	5.8	1.2	0.49	0.3	0.2	32.8	7.5
	Oakdale	7.9	6.3	0.3	0.30			22.0	9.1
Illawarra	Wollongong	3.1	3.1	0.0	0.24	0.1	0.0	29.9	6.6
	Kembla Grange	3.1	3.5	0.4	0.18			24.9	8.4
	Albion Park Sth	2.1	2.3	0.9	0.26		1.1	22.5	6.6
Lower Hunter	Wallsend	3.1	3.1	0.4	0.22		0.2	22.9	7.1
	Newcastle	2.7	2.6	0.4	0.20	0.2	0.1	25.3	6.2
	Beresfield	3.3	3.4	0.0	0.15		0.0	19.8	5.1
Central Coast	Wyong	3.1	3.1	0.2	0.22	0.1	0.1	32.6	5.4
Central Tablelands	Bathurst							32.9	10.9
North-west Slopes	Tamworth							15.7	5.8
South-west Slopes	Albury							29.6	8.0
	Wagga Wagga Nth							42.4	9.1
Upper Hunter - Muswellbrook	Muswellbrook			1.4			1.5	36.1	11.8
Upper Hunter - Singleton	Singleton			0.2			0.0	18.6	8.7

Air quality data

Air quality data for NSW is displayed using the Air Quality Index (AQI) scale and is updated hourly.

The **Vineyard** monitoring site has been decommissioned and there will be **no data** until a new site is established.

NSW map | Upper Hunter map | Newcastle map | NSW index values | Sydney forecast | Alerts | Subscribe

Thursday
23 February 2017
4 - 5 pm (AEST)
Previous | Next | Select
Show index values

VERY GOOD | GOOD | FAIR | POOR | VERY POOR | HAZARDOUS

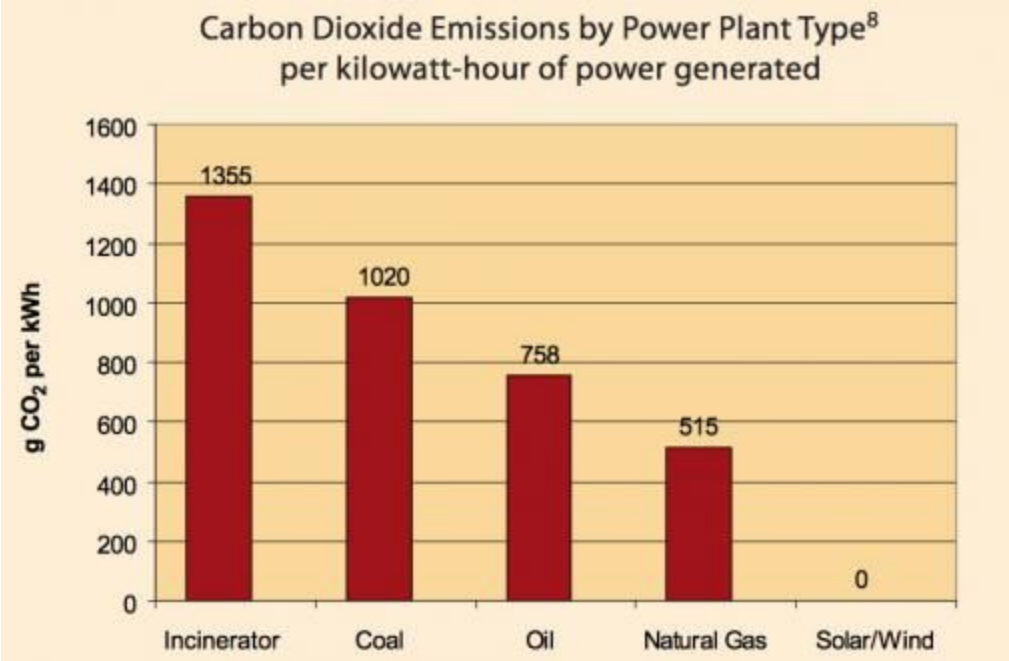
Pollutants		Ozone O3	Ozone O3	Nitrogen dioxide NO2	Visibility NEPH	Carbon monoxide CO	Sulfur dioxide SO2	Particles PM10	Particles PM2.5
Averaging Periods		1-hour average	rolling 4-hour average	1-hour average	1-hour average	rolling 8-hour average	1-hour average	rolling 24-hour average	rolling 24-hour average
Sydney East	Randwick	2.8	2.9	0.1	0.20		0.0	22.6	
	Rozelle	2.4	2.9	0.6	0.16	0.1	0.0	20.3	6.1
	Lindfield	3.1	3.8	0.3	0.17		0.1	18.9	
	Chullora	3.5	4.1		0.19	0.2	0.2	24.4	7.7
	Earlwood	2.7	3.0	0.6	0.18			20.2	5.2
Sydney North-west	Richmond	7.4	6.4	0.3	0.20		0.2	21.5	7.5
	St Marys	7.4	8.2		0.24			22.8	7.7
	Vineyard								
	Prospect	5.4	6.9	0.8	0.24	0.0	0.2	23.9	5.4
Sydney South-west	Bargo	9.4	7.6	0.6	0.28		0.1	21.6	7.1
	Bringelly	6.8	7.8	1.0	0.27		0.2	36.4	7.8
	Camden	7.0	7.6	1.1	0.25	0.2		24.3	10.1
	Campbelltown West	5.9	6.9	1.2	0.26	0.3	0.2	26.2	9.4
	Liverpool	4.8	5.7	1.0	0.49	0.3	0.2	33.4	8.0
	Oakdale	9.5	7.4	0.6	0.32			23.0	9.7
Illawarra	Wollongong	3.0	3.0	0.0	0.27	0.1	0.0	29.9	6.4
	Kembla Grange	2.7	3.2	0.4	0.20			25.4	8.6
	Albion Park Sth	2.2	2.2	1.0	0.26		1.2	23.6	6.9
Lower Hunter	Wallsend	3.0	3.1	0.6	0.22		0.2	22.9	7.1
	Newcastle	2.7	2.6	0.4	0.20	0.2	0.0	25.4	6.3
	Beresfield	3.3	3.3	0.0	0.14		0.0	19.6	5.2
Central Coast	Wyong	3.1	3.1	0.2	0.21	0.1	0.0	35.2	5.5
Central Tablelands	Bathurst							32.6	11.0
North-west Slopes	Tamworth							15.9	6.1
South-west Slopes	Albury							30.1	8.1
	Wagga Wagga Nth							47.4	9.3
Upper Hunter - Muswellbrook	Muswellbrook			0.9			0.7	36.0	11.7
Upper Hunter - Singleton	Singleton			0.2			0.0	18.5	8.8

The Alternative to Incineration - Zero Waste Strategies for NSW

Australia is in the position to learn from the mistakes of other countries after decades of using Incineration. Europe is now turning away from Incineration due to air pollution concerns.

We are now at a crossroads. The decision that are made today about waste management will have long term financial, ecological and human rights impacts on the Australia of tomorrow.
http://nocanberraincinerator.com/wp-content/uploads/2017/10/ACT-Greens-Waste-Policy-Framework-A-Zero-Waste-Future.pdf

Incinerators release more Carbon Dioxide than Coal, Oil and Gas



Incinerators release Volatile Organic Compounds (VOC)

More Info here:
https://en.wikipedia.org/wiki/Volatile_organic_compound#Health_risks

Plume Plotter for proposed Western Sydney incinerator

24/06/2017

1. What is Plume Plotter?

Plume Plotter is a (free) service to model incinerator emissions, mainly in order to predict the ground-level concentrations of pollutants in real time, from current weather data, to act as a warning system for people nearby. It is also used to produce animations of incinerator fallout hourly from historical weather data, to illustrate the effect better than a static annual plot. Plume Plotter uses AERMOD to model the plume from publicly available information: primarily the emissions modelling done for the incinerator proponent by experts as part of a planning application. Plume Plotter starts from the assumption that all of this information is correct and simply aims to reproduce the results found there, in a different form. However, this is sometimes complicated by omissions and inconsistencies in the documents.

2. Problems with the *Air Quality Assessment*

The Western Sydney incinerator was modelled based on several documents from

http://www.majorprojects.planning.nsw.gov.au/index.pl?action=view_job&job_id=6236

in the section "Amended Environmental Impact Statement":

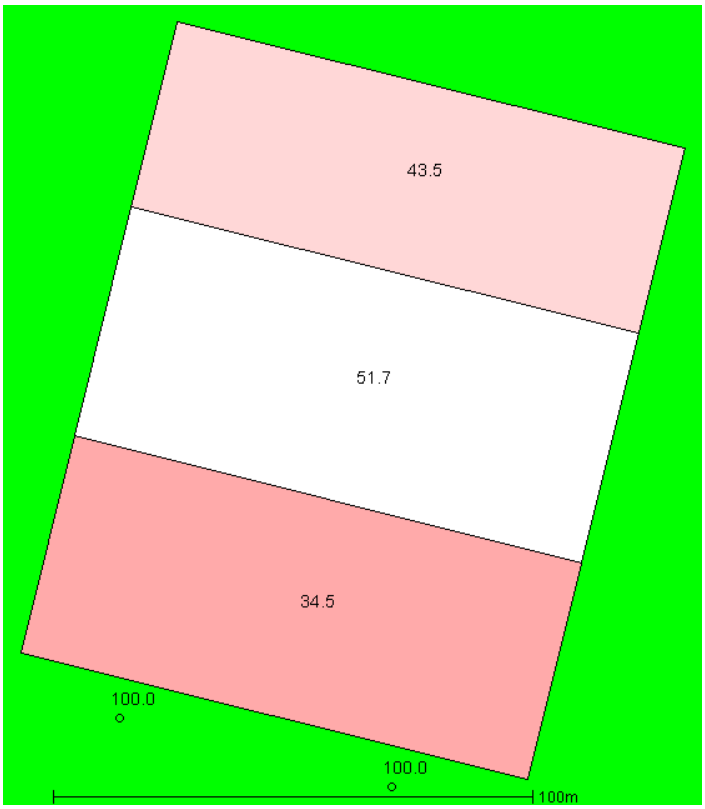
1. Appendix K: *Air Quality Impact and Greenhouse Gas Assessment* (parts 1-3), 31/10/2016
2. Appendix C3: *Layout Elevation* (parts 1-2), 13/10/2016

We call Ref 1 the "AQA" and Ref 2 the "building plans".

While setting up the model, we encountered several omissions and inconsistencies within and between these documents. Some of these may be errors or they might be explained by other documents which have not yet been found. Anyway, they are listed below.

Building angle discrepancy

According to the building plans [2], the incinerator building is oriented at an angle of 14 degrees. There are two stacks, 58 metres apart, equidistant from the "south" side of the building, with the westernmost stack at a direction of 284 degrees from the easternmost one, as shown in the diagram here.



However, Table 7.8 of the AQA [1] provides UTM grid coordinates of the two stacks: (298632.9, 6257733.5) and (298574.6, 6257741.3). This confirms the distance as about 58 metres but puts them at an angle of 7.6 degrees from a west-east line (i.e., 277.6 degrees), rather than 14 degrees. According to http://www.earthpoint.us/, grid north here differs from true north by 1.2 degrees, but this would not explain the 6.4 degree difference.

The AQA [1] does not provide the coordinates of the buildings modelled (although most AQAs do); it only provides a

visualisation (Figure 8.1). Therefore, it is impossible to know whether the AQA models the building with an orientation of 7.6 degrees, aligned with the two stacks, or 14 degrees with the two stacks at different distances from the south side of the building. Either of these would be inconsistent with the building plans [2] and would affect the building downwash.

Our model includes the stacks and building as pictured above, with the easternmost stack at (298632.9, 6257733.5).

Horsley Park results not shown

The AQA [1] presents results using weather data from a weather station run by NSW OEH at St Marys. It also used weather data from the BoM weather station at Horsley Park ("*Sensitivity analysis was completed using the alternative Horsley Park data for 2013.*") but the latter results are apparently not presented.

This prevents comparison between the AQA's results and ours, which were obtained using Horsley Park weather data. (St Marys weather data was not available to us.)

Horsley Park 2013 weather data wrongly described

Although the AQA [1] does not include results using weather data from Horsley Park, it does show some statistics about this data, including wind roses, in Appendix F. Figure F-5 claims that the proportion of hours in 2013 with calm winds ("*defined as wind speeds less than 0.5m/s*" [1] (p19)) is 24.5%. Our analysis of the same data shows that this fraction is actually 17.1%. 24.5% is the proportion of hours with wind speeds **less than or equal to 0.556m/s** (i.e., up to and including 2km/h; wind speeds are reported in integer km/h in the data that we have access to).

Treatment of cloud cover data unclear

The AQA states [1] (p20) that it used cloud cover data (which is not recorded at Horsley Park) from Bankstown Airport weather station. However, in our data from Bankstown Airport, supplied by BoM, cloud cover data is included for only a small fraction of hours. The AQA does not seem to reveal how they handled the large number of missing hours.

We used cloud cover data from the ERA dataset because of the incompleteness of the Bankstown Airport data.

Upper air estimator used

The AQA states that "*For AERMET the use of the Upper Air Estimator was used* [sic]" [1] (p20). The "upper air estimator" is not an AERMET feature but part of an expensive software package, without which the AQA's results could not be reproduced.

AERMET parameters not provided

The AQA [1] (p46) states that "*Values of surface roughness, albedo and bowen ratio were determined…*" for St Marys weather station, but doesn't provide those values. This makes it impossible to reproduce the AQA's results even with access to the St Marys data.

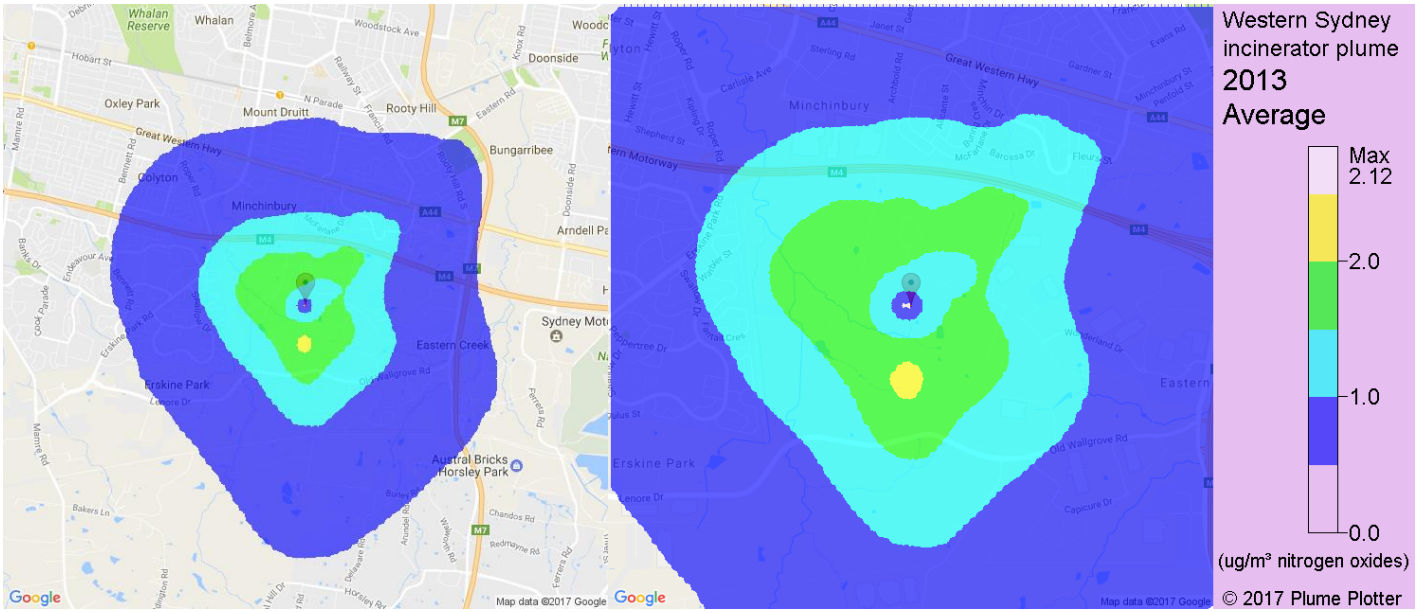
Few background pollution levels

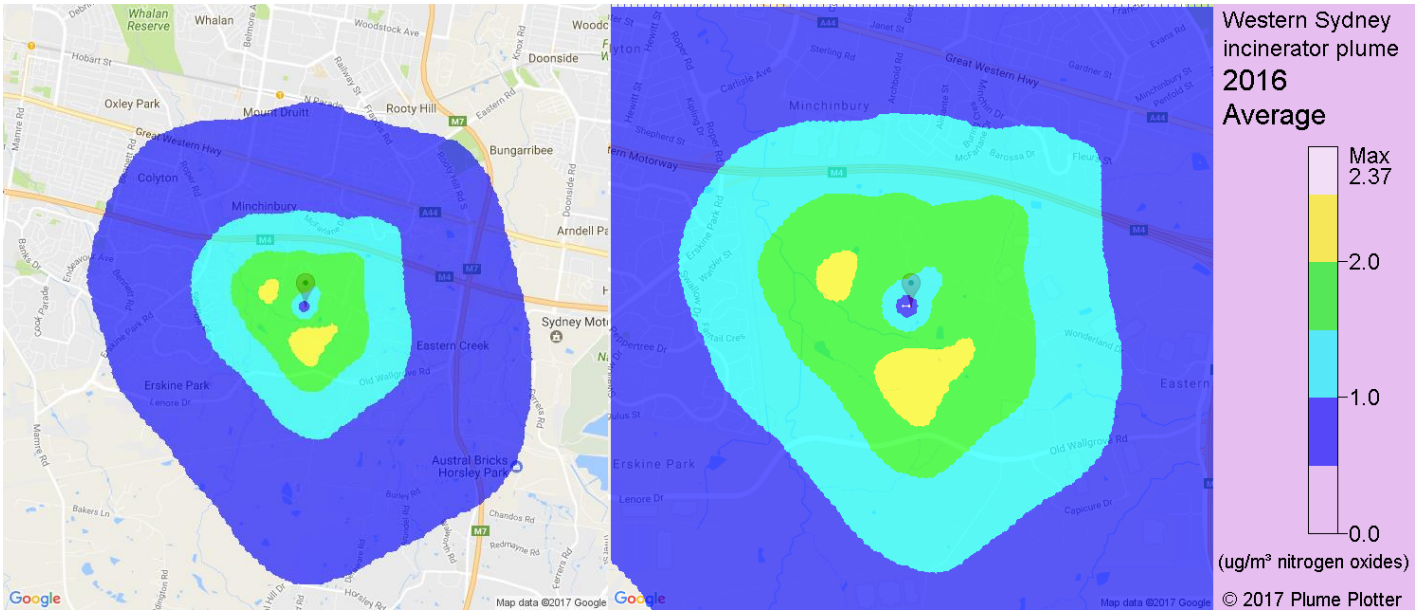
Section 6 of the AQA [1], about the existing air quality, covers very few pollutants (at least compared with AQAs in the UK). This makes it harder to understand the impact of the incinerator.

3. Our predictions

The AQA [1] showed predicted pollution from the incinerator using St Marys weather data but not Horsley Park weather data. The AQA says, "*Sensitivity analysis was completed using the alternative Horsley Park data for 2013. The results demonstrated that use of the St Marys meteorological data provided a more conservative assessment for almost all of the investigated pollutants.*" Therefore, our results (using Horsley Park weather data) would be expected to show lower concentrations than those in the AQA.

This is the case, as shown in the following plots of annual mean concentrations of nitrogen oxides (expressed as NO2), which should be compared with Figure 9.3 of the AQA [1]. (The AQA assumes that 100% of nitrogen oxides is in the form of NO2.) The AQA predicts a maximum of 3.4µg/m^3 and the area affected by high concentrations is slightly larger, as expected.





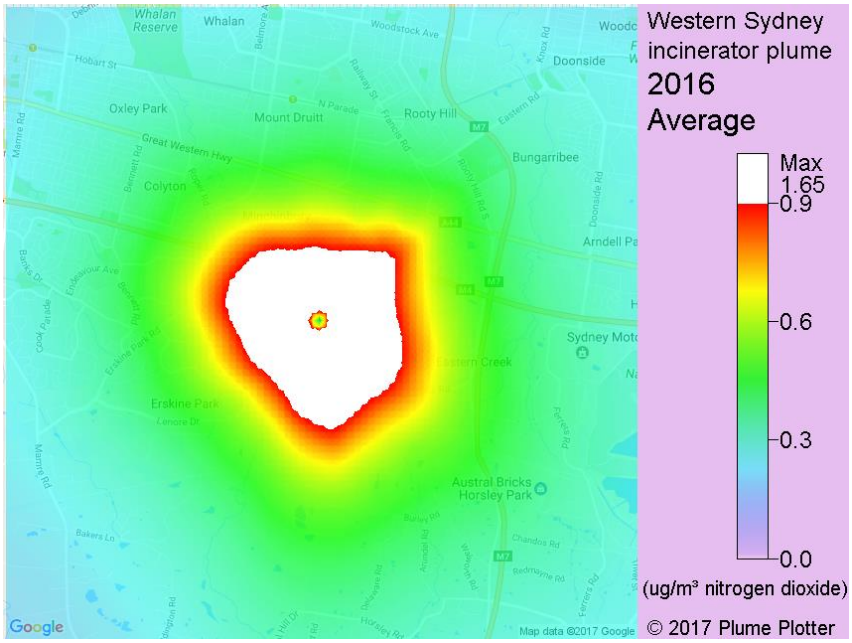
4. Comparison with some other incinerators

This plot below shows the predicted annual mean concentration of nitrogen dioxide (NO2) for 2016. Here we use a heatmap plot and calculate NO2 as 70% of the concentration of oxides of nitrogen, which is the usual convention used in UK incinerator applications. This is to allow comparison with plots done previously. E.g., the white area (if any) shows concentrations above 0.9µg/m^3 of NO2 or 1.29µg/m^3 of NOx.

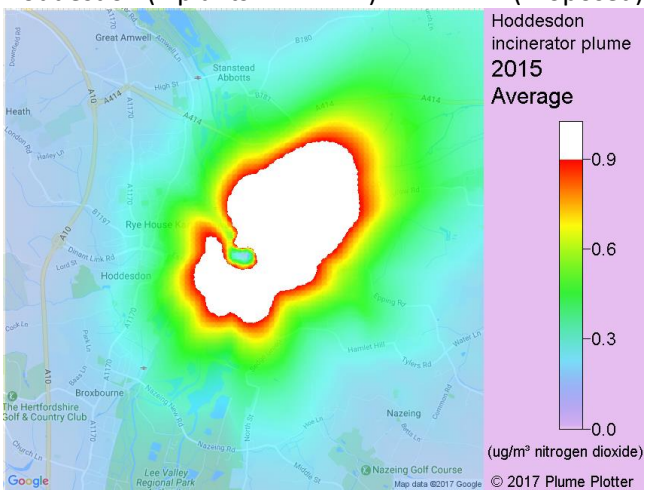
The following eight plots show the same predictions for several UK incinerators. They are chosen because they all correspond closely to those done on behalf of the incinerator promoter in the respective planning applications, so they are likely to be reliable (although none are confirmed by monitoring). For comparison purposes, all nine plots use the same heatmap and are on the same scale. The map shows an area of approximately 10x10km for Sydney, 7.5x7.5km for England, and 6.5x6.5km for Scotland, because the scale varies with latitude.

The variation between these incinerators is partly because they have different assumed concentrations of nitrogen oxides in their emissions: 188mg/m^3 for Western Sydney, 200mg/m^3 for most UK incinerators, but 140, 150, and 180mg/m^3 for Aberdeen, Cornwall and South London respectively. Most differences are due to other factors: e.g., flow rate, stack height, building downwash, efflux velocity and temperature, etc.

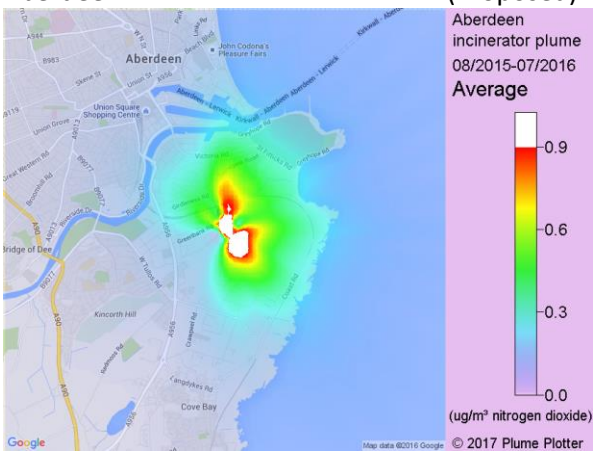
This comparison shows that the predicted effect of these incinerators vary substantially, and the Western Sydney one is among the worst.



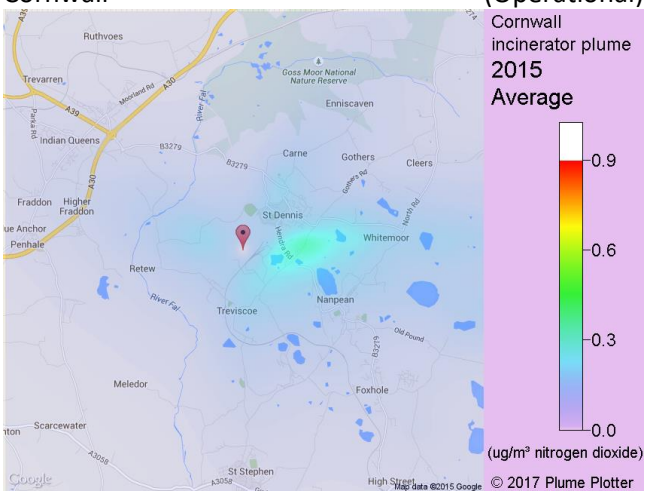
Hoddesdon (2 plants: ERF+ATT) (Proposed)



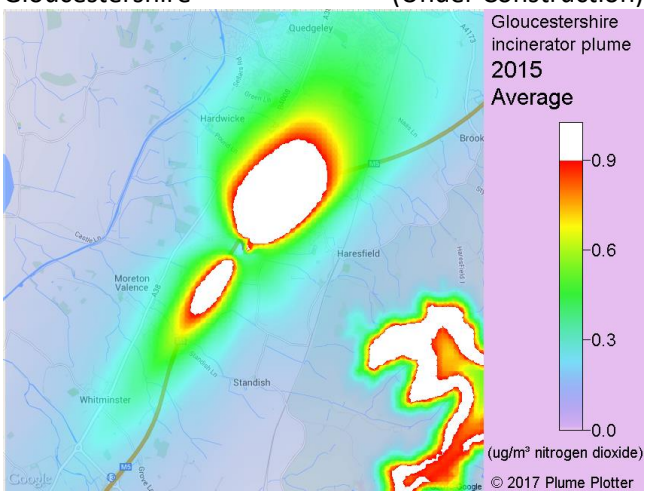
Aberdeen (Proposed)



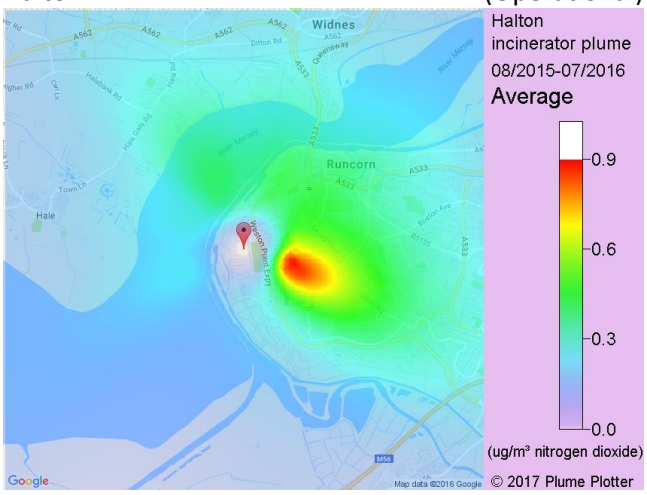
Cornwall (Operational)



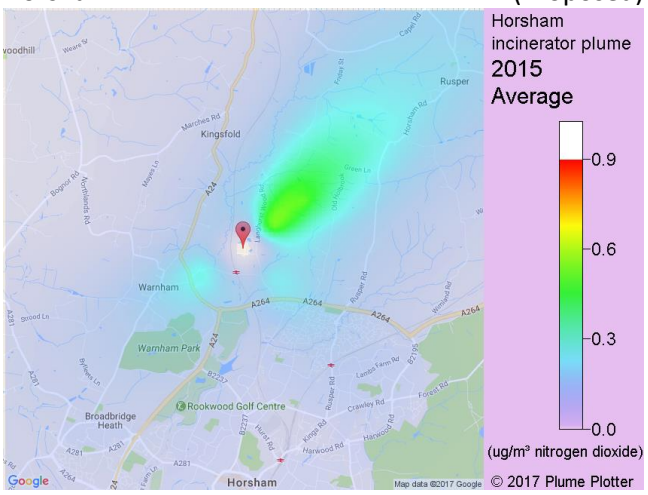
Gloucestershire (Under Construction)



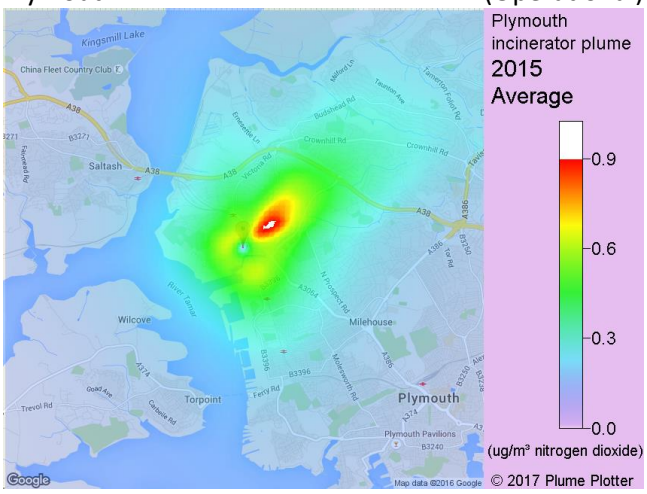
Halton (Operational)



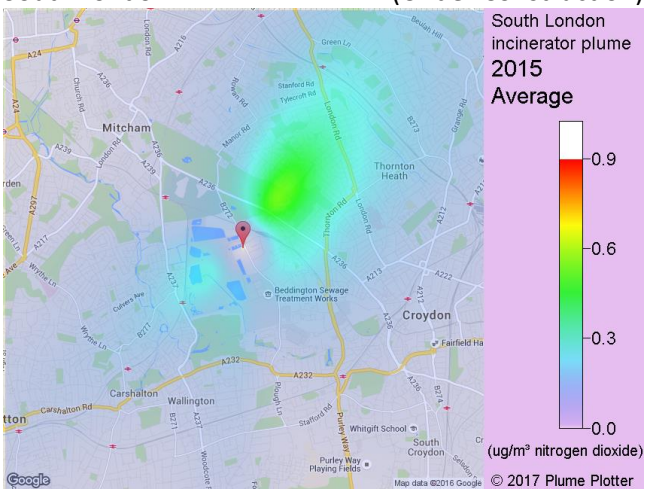
Horsham (Proposed)



Plymouth (Operational)



South London (Under Construction)



Incineration does not make sense in the Twenty First Century

Paul Connett, PhD

Director, Work on Waste, USA (1985 -2000)

Currently, Executive Director (AEHSP)

AmericanHealthStudies.org

pconnett@gmail.com

Sydney, Australia, Feb 23, 2018

The Arguments Against Incineration

1. Incineration is bad for the local, regional and global economy
2. Incineration is the most expensive way of handling waste
3. Incineration is the most expensive way of making electricity
4. Incineration is not in the community interest
5. Incineration creates very few permanent local jobs
6. Incineration is a threat to agriculture, tourism and desirable industries
7. Incineration is a threat to property values
8. Incineration is a threat to health and the intellectual development of children

The Arguments Against Incineration

9. Incineration produces toxic air emissions
10. Incineration produces a toxic ash. Incineration does not get rid of landfills
11. Incineration is a waste of energy
12. Incineration is a wasted opportunity to fight global warming
13. Incineration does not move us towards a sustainable society (i.e. circular economy)
14. There are far better alternative ways of handling our discarded materials which are better for the local economy; pose little threat to health; create far more jobs; are compatible with tourism and agriculture; and move us towards a sustainable future.

DIFFERENT TIMES DEMAND DIFFERENT QUESTIONS

20th CENTURY

WASTE MANAGEMENT

*" How do we **get rid** of our waste efficiently with minimum damage to public health and the environment ?"*

21st CENTURY

RESOURCE MANAGEMENT

*" How do we handle our **discarded resources** in ways which do not deprive future generations of some, if not all, of their value ?"*

DIFFERENT TIMES DEMAND DIFFERENT QUESTIONS

20th CENTURY

WASTE MANAGEMENT

The key issue was SAFETY

21st CENTURY

RESOURCE MANAGEMENT

The key issue is SUSTAINABILIY

The Global Picture

Sustainability

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

We have to move from
from a
throwaway society
to a
sustainable society

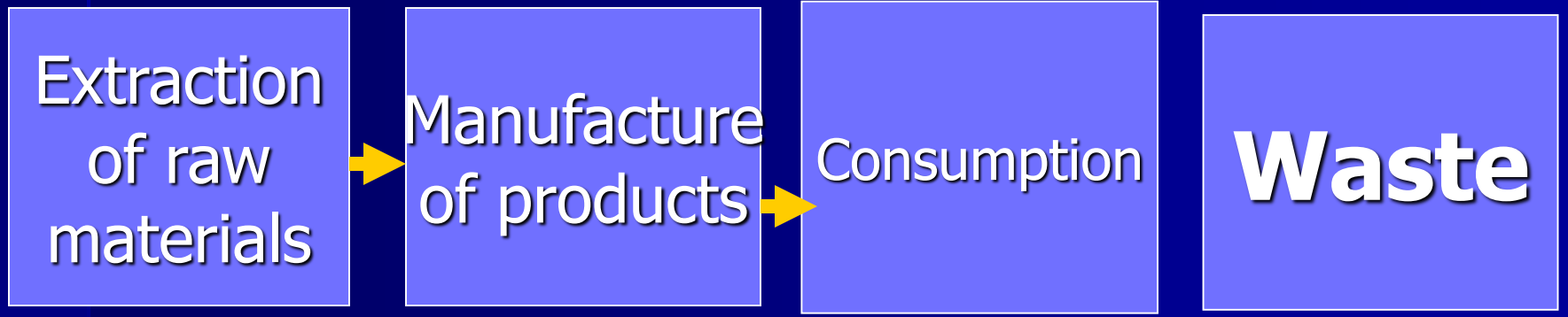
We have to move from from a

linear economy

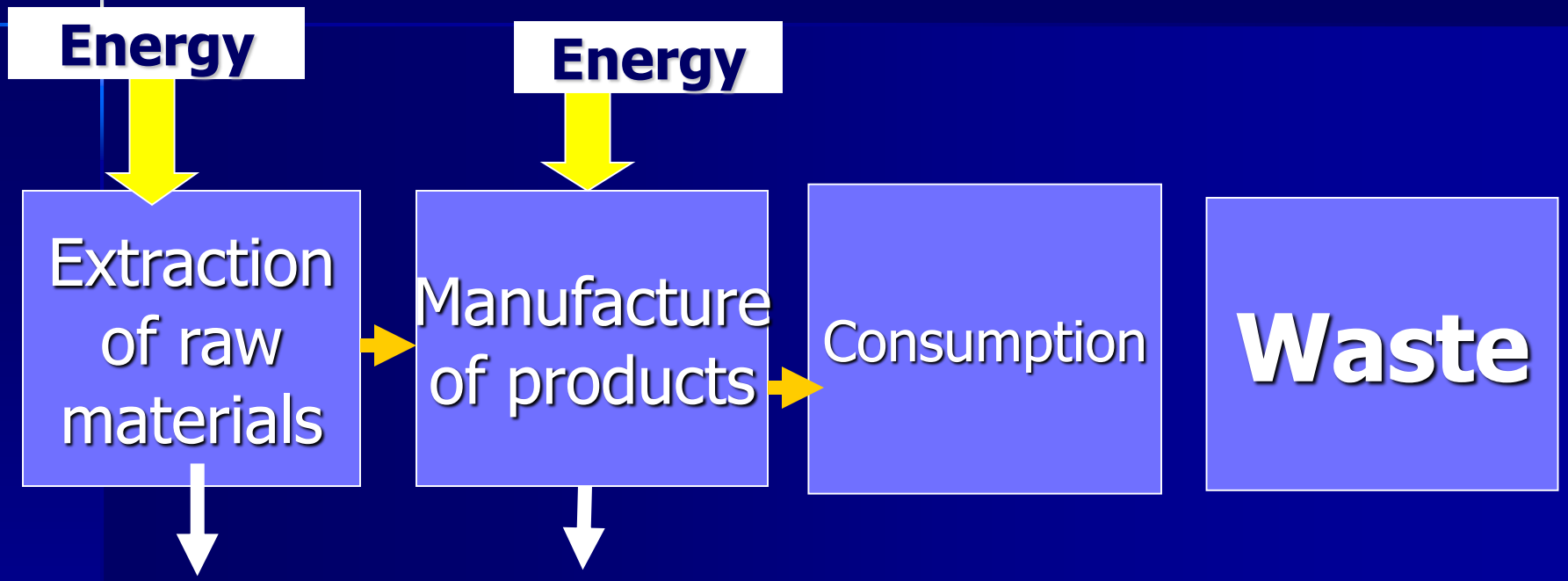
to a

circular economy

The Linear Economy

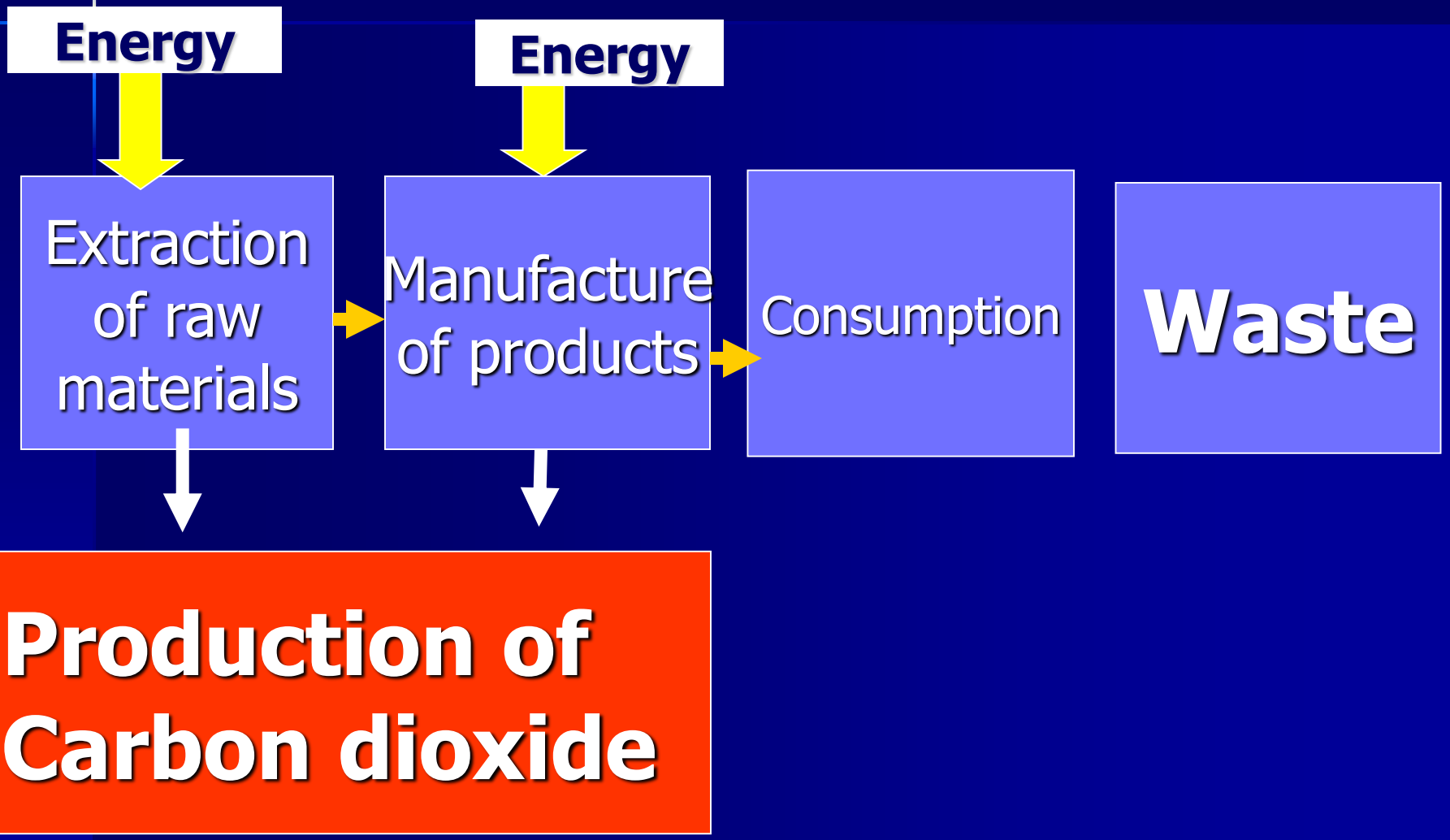


Global Impacts

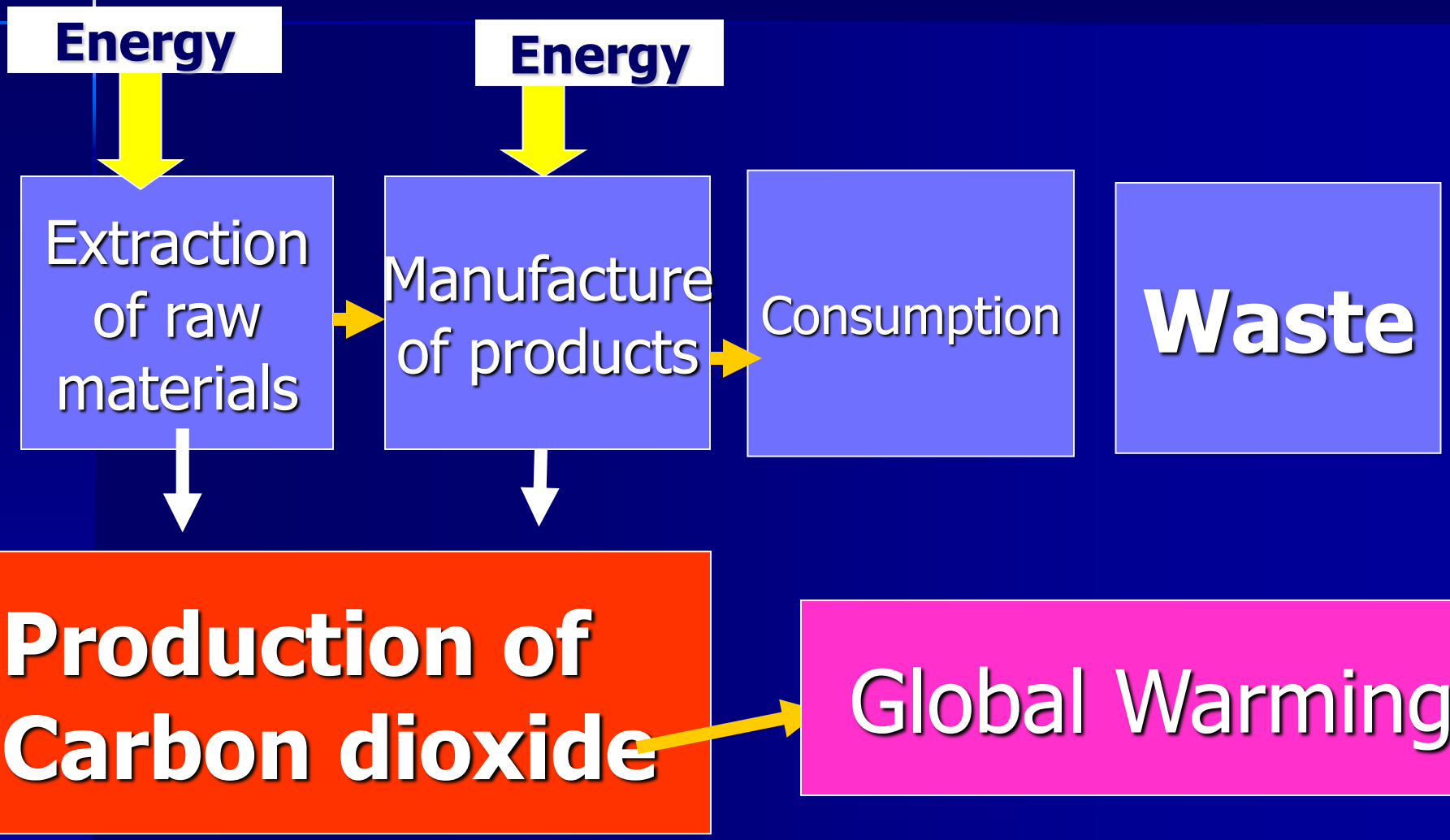


Exhaustion of fossil fuels and mineral resources

Global Impacts

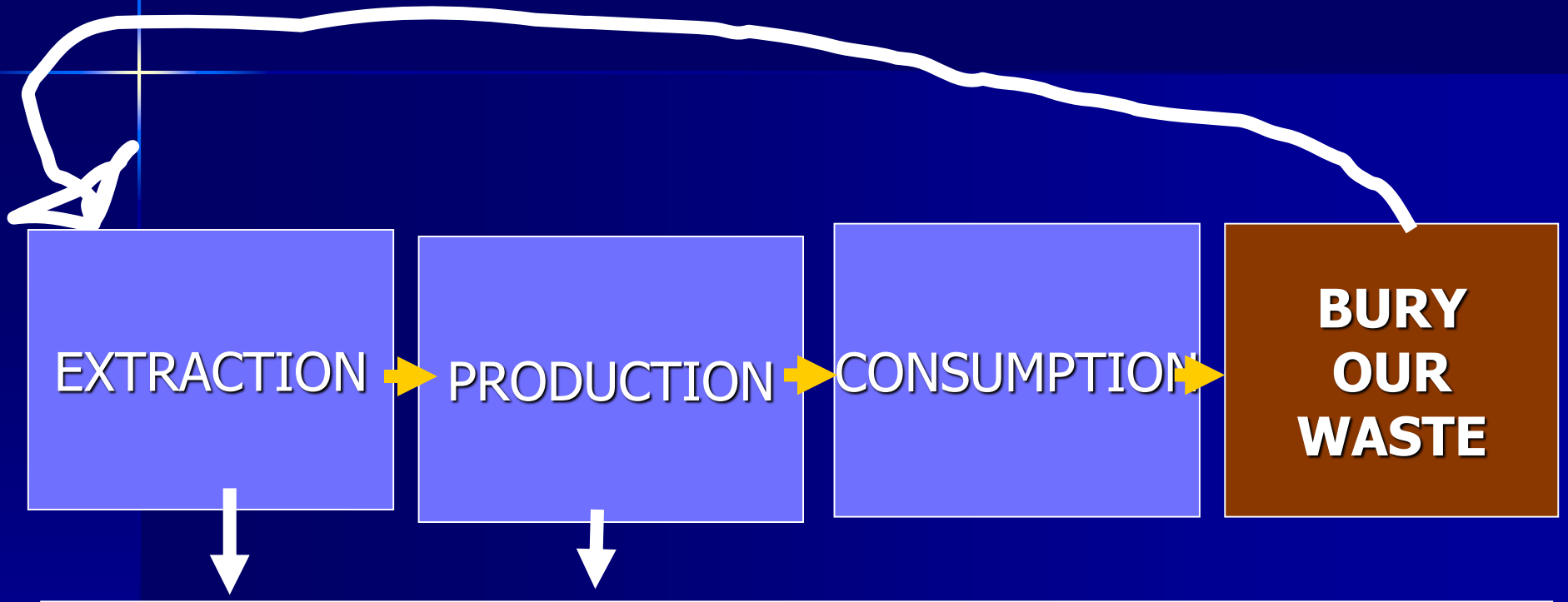


Global Impacts



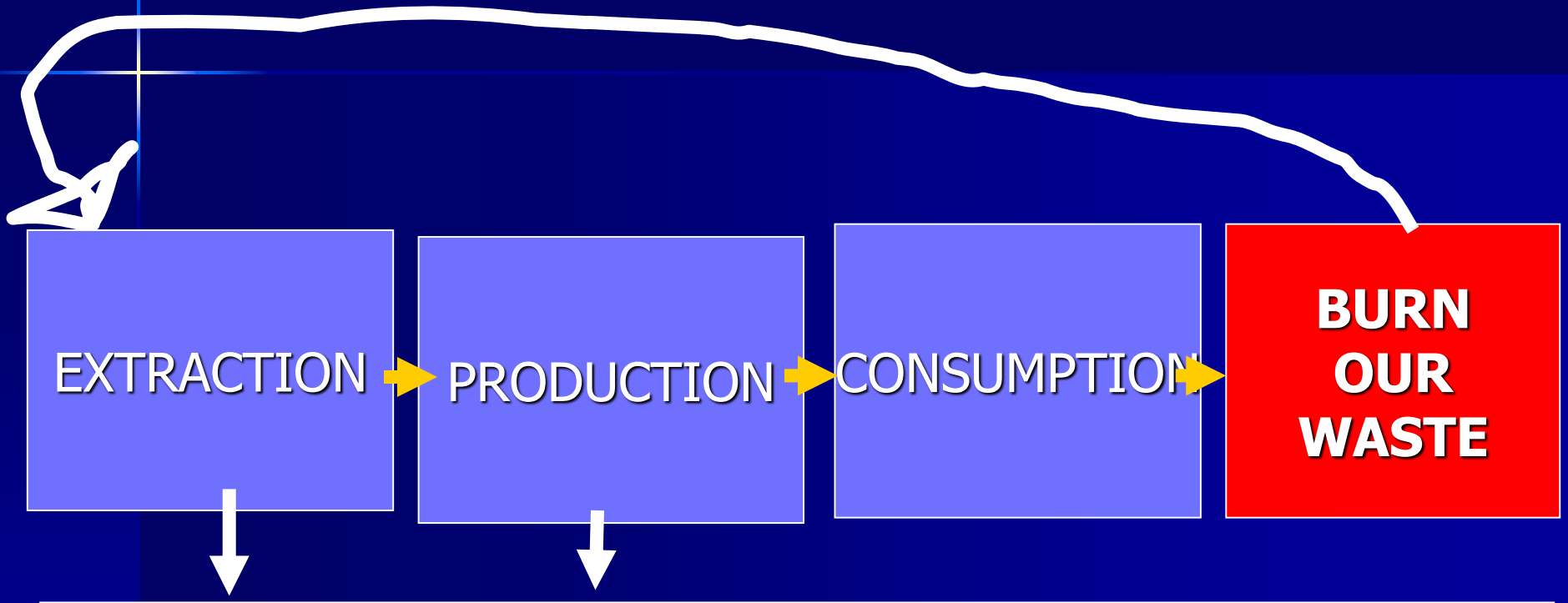
How do different waste handling methods impact the linear economy?

LANDFILLING



When we bury our waste we have to go back to square one. There is NO movement towards a circular economy.

INCINERATION and GASIFICATION



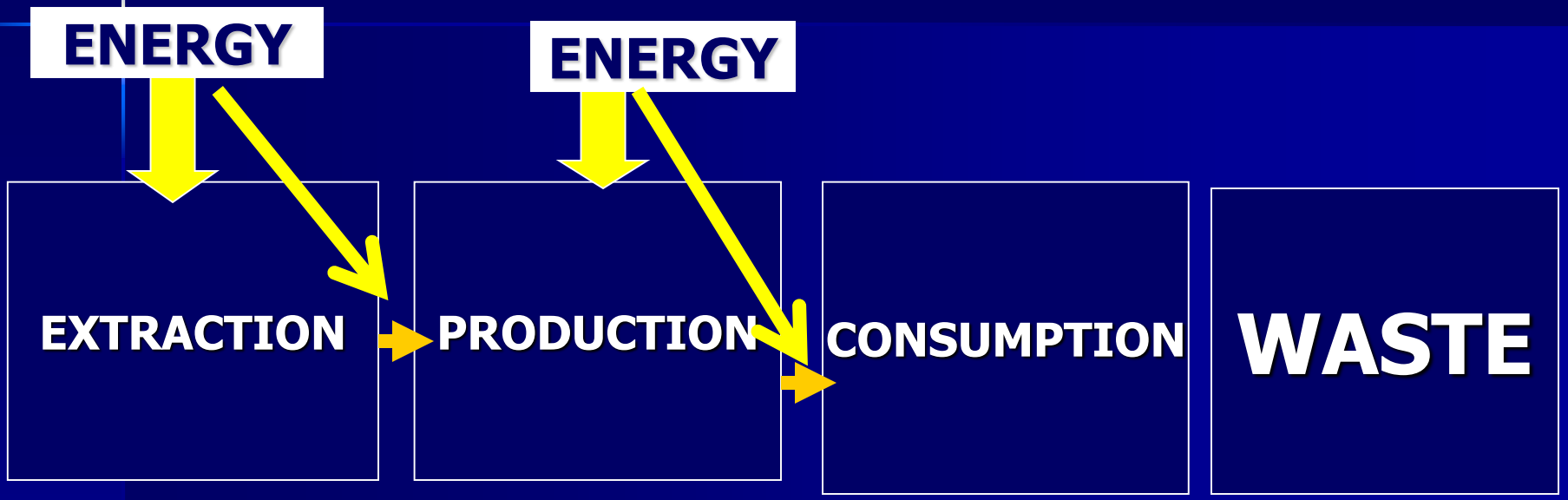
When we burn our waste we have to go back To square one. In addition we put out toxic air emissions, more carbon dioxide and are left with toxic residues.

Incineration is NOT a sustainable solution

Locally incinerators produce a little energy BUT **globally** are a **HUGE waste of energy**

Because they waste the opportunity to recover the **imbedded energy** in extraction, transport and manufacture

ENERGY USE OF THE LINEAR SOCIETY



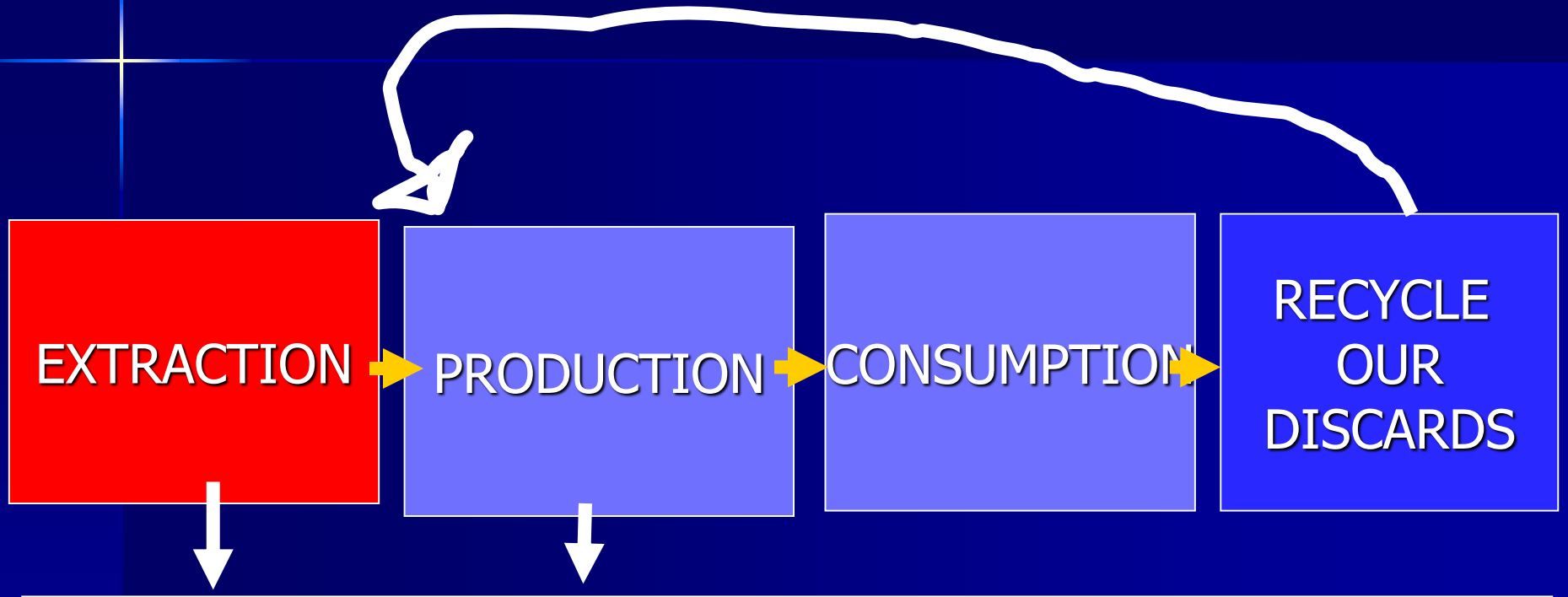
Far more energy is saved with recycling, reuse and composting.

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

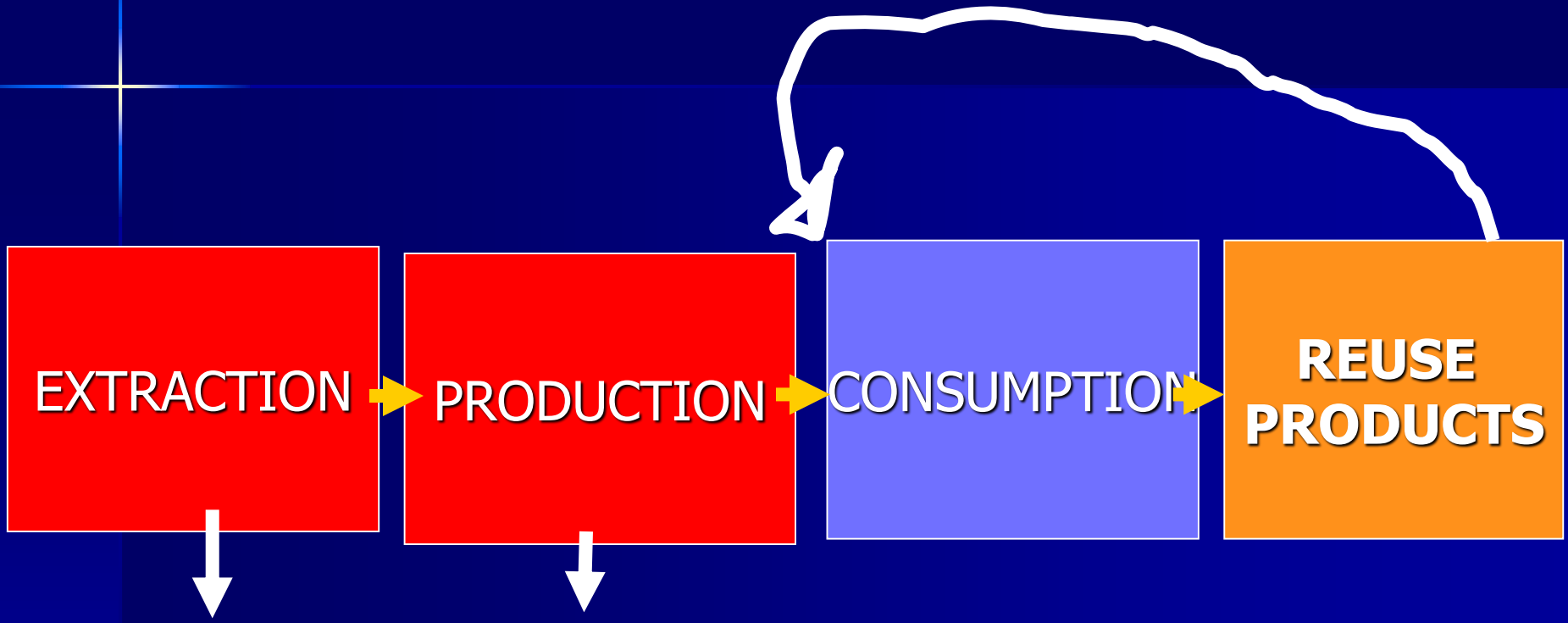
Incinerators are a HUGE wasted opportunity to fight global warming

RECYCLING MATERIALS



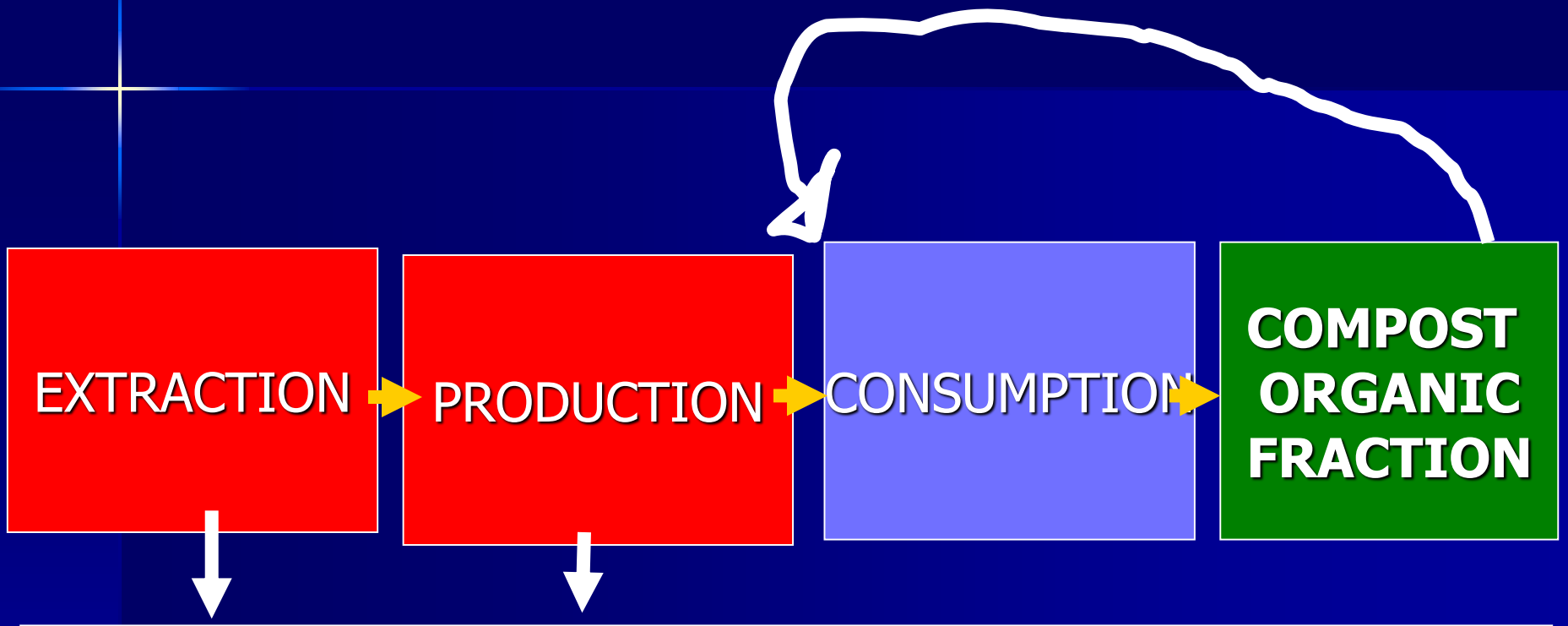
When we recycle our discarded materials back to industry we eliminate the global impacts of extraction.

REUSE PRODUCTS



When we reuse products we cut out the global impacts of both extraction and manufacture.

COMPOST ORGANICS



When we compost the organic fraction we reduce the need for synthetic fertilizer. Compost also improves the structure of soil, holds onto water, nutrients and CARBON.

Incineration is not good for tourism

As far as sustainability is concerned

Every ton that we bury or burn takes us in the opposite direction;

Whereas every ton that

We compost,

We reuse,

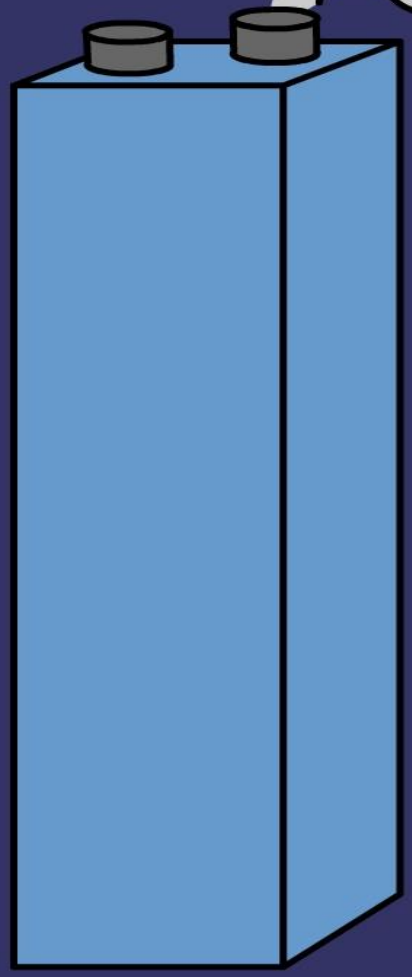
We recycle, and

We avoid,

takes us in the right direction

Incinerators put many highly toxic and persistent substances into the air

AIR EMISSIONS



- CO2 + H2O
- ACID GASES:
  HCl, HF, SO_2
  NO_x
- TOXIC METALS:
  Pb, Cd, Hg, As, Cr etc
- NEW COMPOUNDS:

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

NANO PARTICLES

There are no regulations for nanoparticles emitted from incinerators!

Acid gases contribute to respiratory problems for local people

The major problem with toxic metals (e.g. lead and mercury) is that they are brain damaging (neurotoxic)

The major problem with **dioxins and furans** (and related compounds) is they are highly persistent and accumulate in the food chains

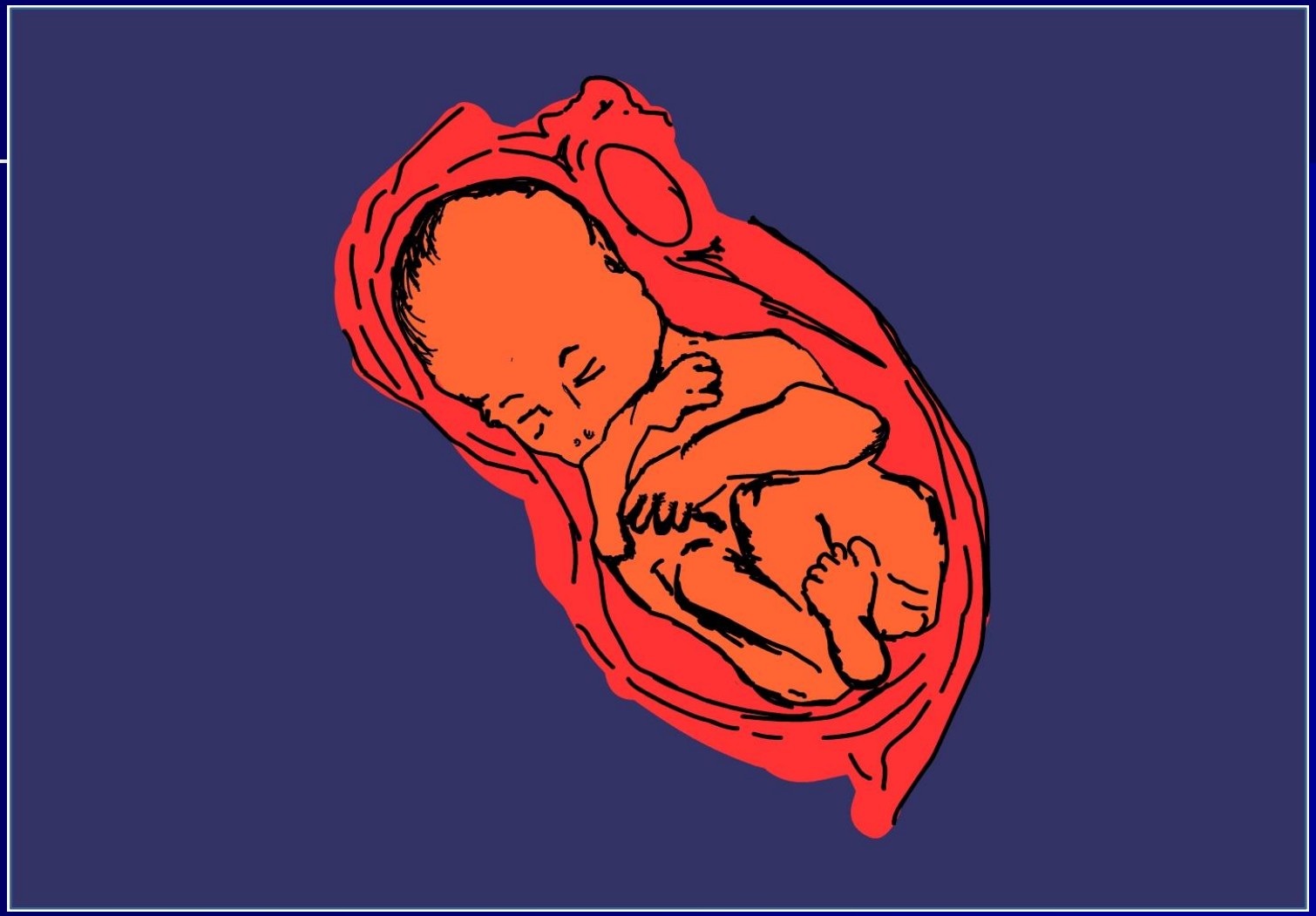
Dioxins - major health concerns

- **Dioxins accumulate in animal fat. One liter of cows' milk gives the same dose of dioxin as breathing air next to the cows for EIGHT MONTHS (Connett and Webster, 1987).**
- **In one day a grazing cow puts as much dioxin into its body as a human being would get in 14 years of breathing (McLachlan, 1995)!**
- **Dioxins steadily accumulate in human body fat. The man cannot get rid of them BUT A woman can…**
- **…by having a baby!**
- **Thus the highest dose of dioxin goes to the fetus and then to the new born infant via breastfeeding…**

Dioxins interfere with fetal and infant development

- Dioxins act like fat soluble hormones
- Disrupt male and female sex hormones; thyroid hormones; insulin; gastrin and gluocorticoid.
- **Linda S. Birnbaum (**Health Effects Research Laboratory, US EPA) Developmental Effects of Dioxins *Environmental Health Perspectives*, 103: 89-94, 1995

WE MUST GET DIOXIN



OUT OF OUR BABIES!

Institute of Medicine, 2003

Dioxins and Dioxin-like Compounds in the Food Supply

Strategies to Decrease Exposure

July 1, 2003

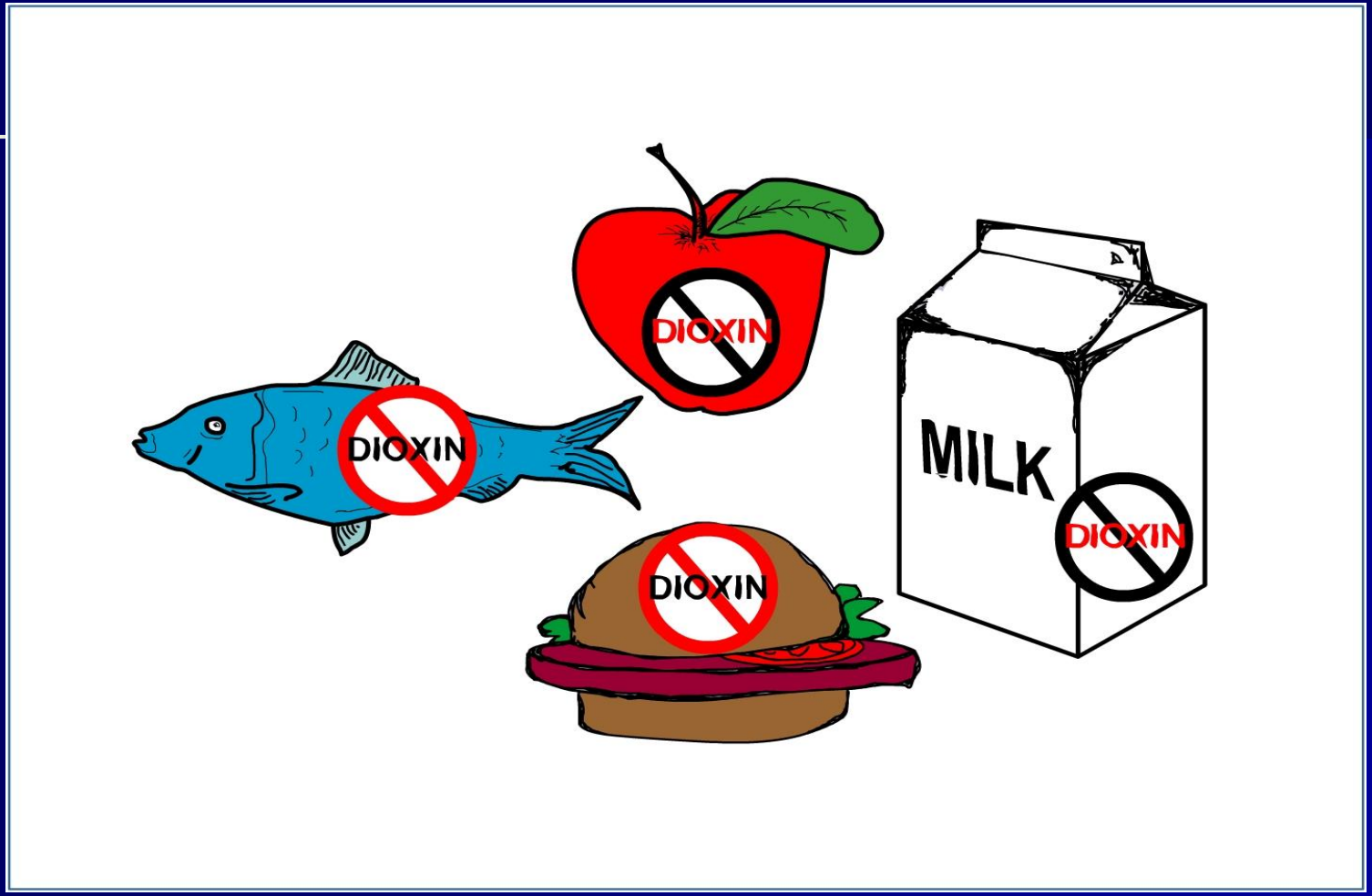
Institute of Medicine, 2003

- Fetuses and breastfeeding infants may be at particular risk from exposure to dioxin like compounds (DLCs) due to their **potential to cause adverse neurodevelopmental, neurobehavioral, and immune system effects in developing systems…**

Institute of Medicine, 2003

- …The committee recommends that the government place a **high public health priority** on reducing DLC intakes by girls and young women **in the years well before pregnancy is likely to occur**.
- (by)
- **Substituting low-fat or skim milk, for whole milk, (and)… foods lower in animal fat…**

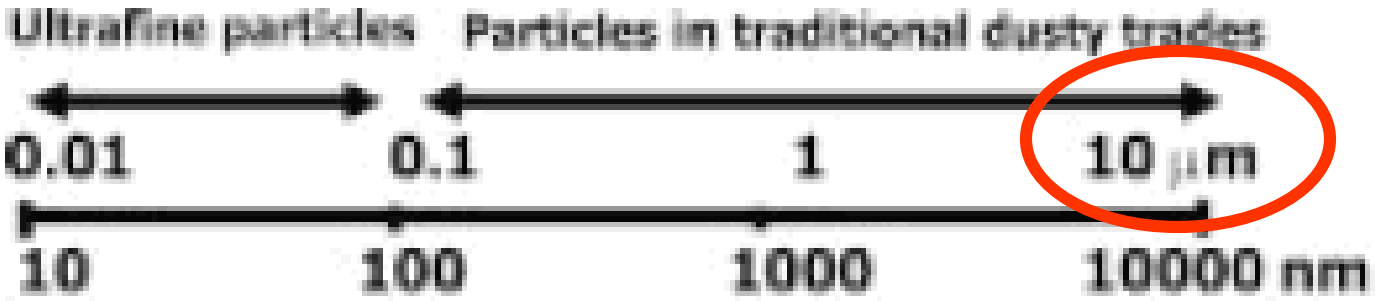
WE MUST GET DIOXIN



OUT OF OUR FOOD!

While modern incinerators have reduced toxic metal and dioxin emissions there is no real accountability. The most toxic emissions are not monitored on a continuous basis – but only with "Spot tests" conducted with advance notice.

Six hour tests for dioxins made 1,2 or even 4 times a year are a confidence trick played on the public!



Size of Particle regulated in incinerator emissions

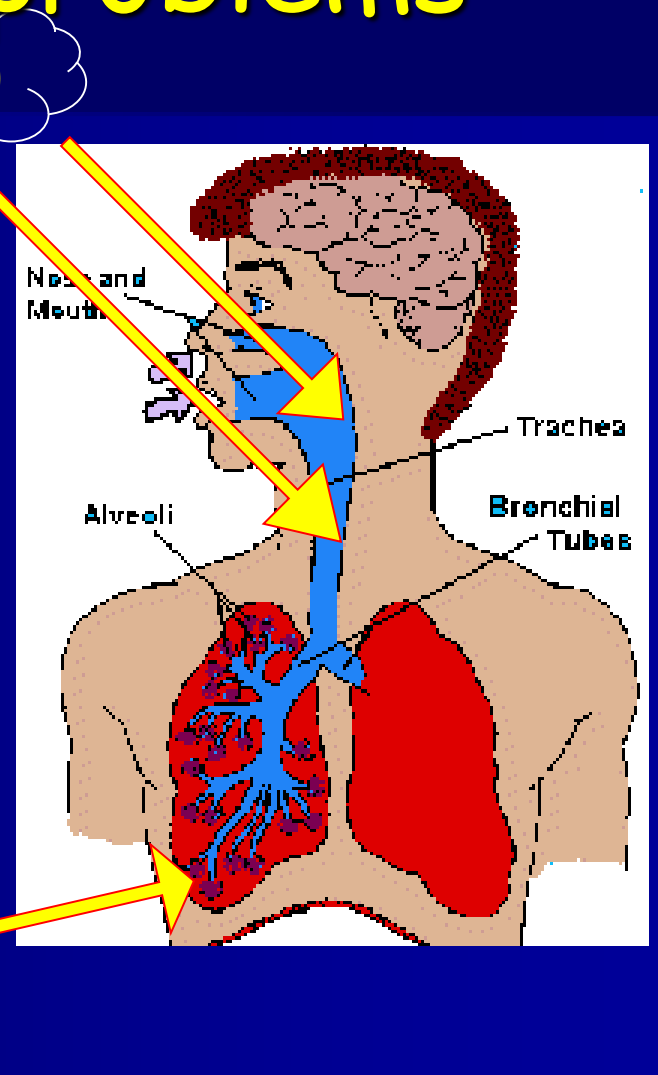
NANOPARTICLES

$PM_{2.5}$

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

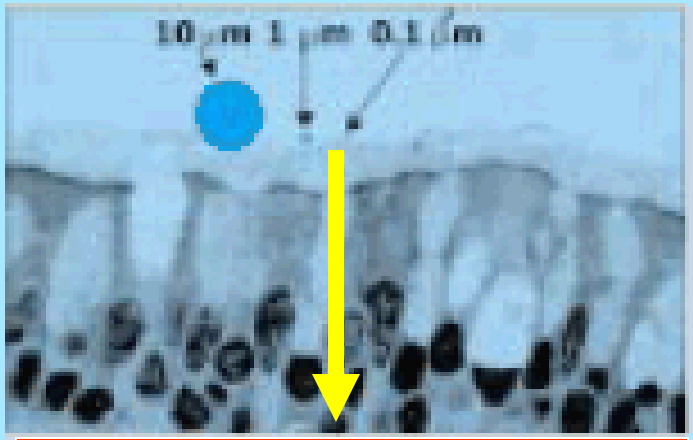
•We Know that PM10 and PM2.5 cause many health problems

- In urban areas both mortality and morbidity increase with particulate levels
- •The smaller the particles the worse it gets



Incineration and nanoparticles

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



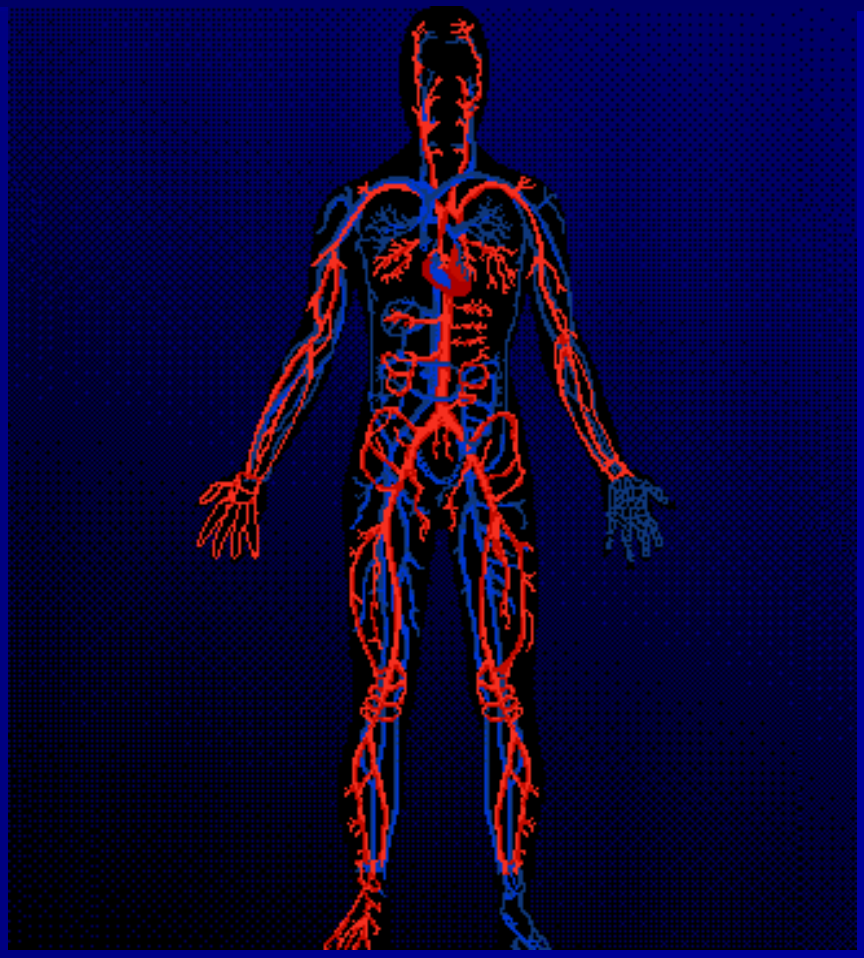
BLOOD

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 cilia.

Nano Pathology

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



Incineration, nanoparticles & Health

Statement of Evidence

Particulate Emissions and Health
Proposed
Ringaskiddy Waste-to-Energy Facility

Professor C. Vyvyan Howard MB. ChB. PhD. FRCPath. June 2009

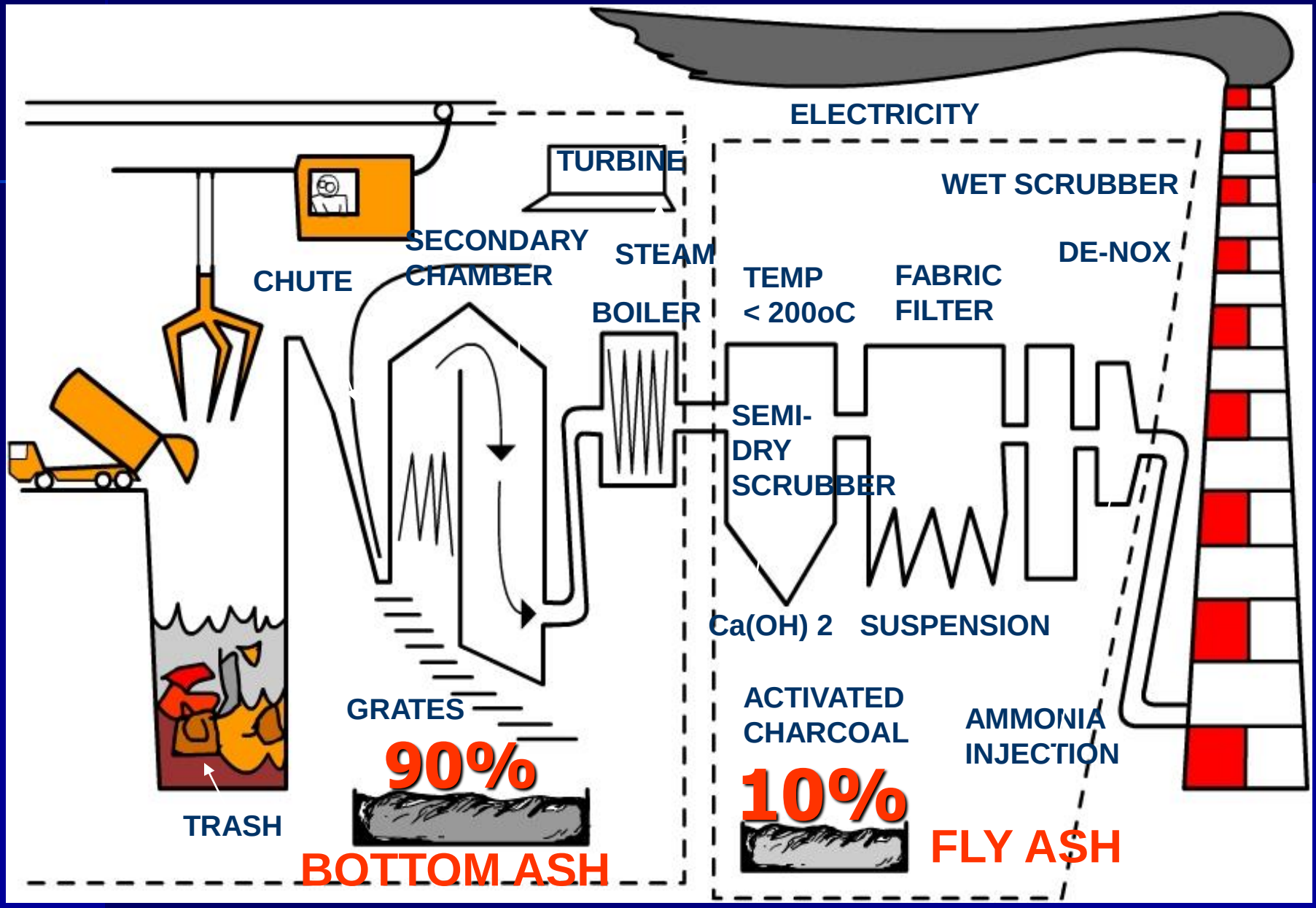
VYV.howard@googlemail.com

Incineration does not get of landfills.

You still need landfills to handle the ash

- Over half the money spent on building an incinerator today goes into the cost of the air pollution control equipment

For every 4 tons of trash you get at least one ton of ash



Is incinerator ash toxic?

- COMMON SENSE: The better the incinerator gets at protecting the air from toxic metals and dioxins, the more toxic the ash.
- Is the ash toxic? Most countries think so!

- In Germany & Switzerland the fly ash is put into nylon bags and placed in salt mines
- In Japan many of their incinerators vitrify their fly ash -and some even the bottom ash - to prevent leaching out of metals….
- In Denmark …
- they send all their ash to Norway!
- In the UK the fly ash is sent to hazardous waste landfills

Covanta “Combined Ash” monofill, Haverhill, Mass

Ash questions

- How much ash are workers at the incinerator exposed to?
- How are the workers monitored for toxic metal and dioxin exposure?
- Is the health of workers monitored? For how long?
- How much lead ends up in surface run-off water on rainy days or when surface snow melts?

Ash questions

- How much of the fine ash particles are carried by the wind to nearby homes and gardens during unloading at the landfill?
- during movement at the landfill?
- How much of the mercury re-evaporates from the ash on hot days?

The modern incinerator is attempting to perfect a bad idea

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

The Better Alternatives to Incineration and Mega-landfills

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

- Better organization
- Better education
- and better industrial design
- These are key components of a Zero Waste strategy

TEN STEPS to ZERO WASTE

1. Source Separation

2. Door to Door Collection

3. Composting

4. Recycling

5. Reuse, Repair, Research & Community Centrs

6. Economic Incentives

7. Waste Reduction Initiatives

8. Residual Separation & Research Center

9. Better Industrial Design

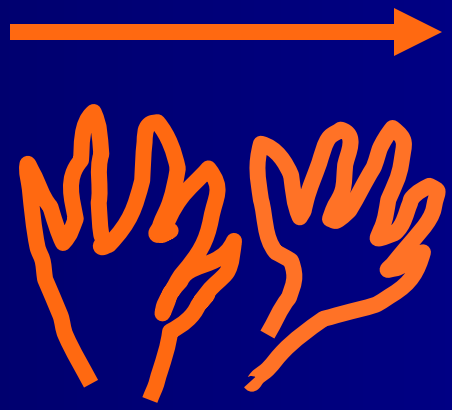
10. Interim Landfill

2030

STEP 1.

1. Source Separation

Waste



Resources

STEP 2.

1. Source Separation

2. Door to Door Collection

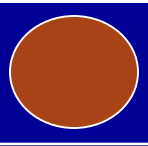
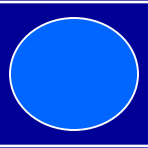
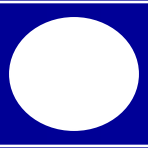
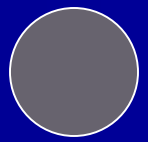
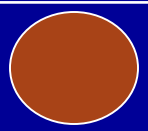
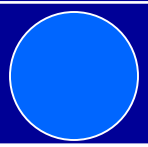
San Francisco

The San Francisco system

Once a week pick-up

Italy

Capannori

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

STEP 3.

3. Composting

Discarded organics hierarchy

1) Feed people
2) Feed animals
3) Feed the soil **(we need healthy soil to produce healthy food to produce healthy people!)**

Composting (and vermiculture) Hierarchy

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

In SF it is 25% cheaper for restaurants to put out clean organics than mixed waste

The Composting plant

Serving San Francisco

Local farmers use compost

Over 200 vineyards use the compost

STEP 4
Recycling

STEP 5.

5. Reuse, Repair and Research Centers (Community Centers)

Value of Los Angeles discarded materials

Market Categories	%	Tons/Year	$/ton	$
1.Reuse Reusable items	2.0	72,000	550	39,600,000
2.Paper	[illegible]	792,000	20	15,840,000
3.Plant Debris	5.5	198,000	7	1,386,000
4.Putrescibles	17.0	612,000	7	4,284,000
5.Wood	4.0	144,000	8	1,152,000
6.Ceramics	13.0	468,000	4	1,872,000
7.Soils	10.0	360,000	7	2,520,000
8.Metals	4.0	144,000	40	5,760,000
9.Glass	2.0	72,000	10	720,000
10.Polymers	8.0	288,000	100	28,800,000
11.Textiles	2.0	72,000	20	1,440,000
12.Chemicals	0.5	18,000	15	270,000
No market (diapers, treated wood, mistakes)	10.0	360,000		0
TOTAL PER YEAR	100	3,600,000		$103,644,000


URBAN ORE ECOPARK

- Urban Ore operating for 30 years

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

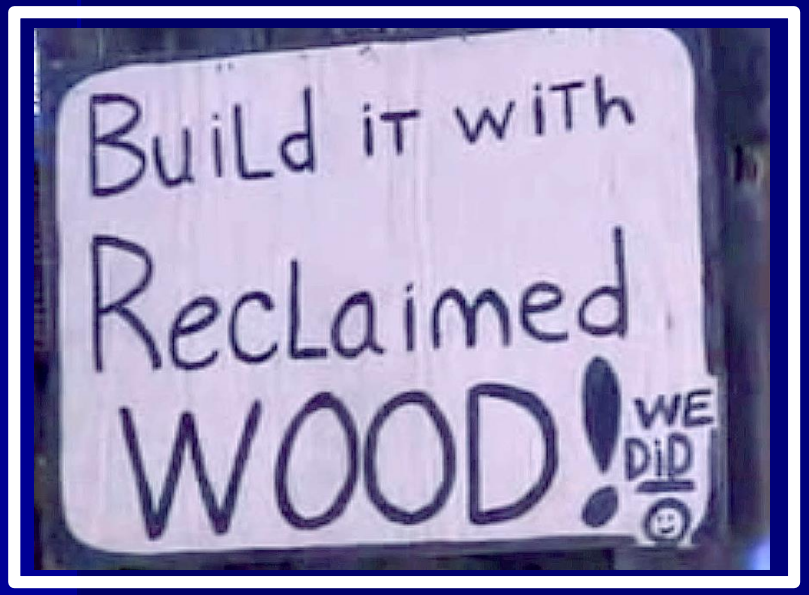

1. SALE IS COM
A CASH REGISTE
2. NO REFUNDS WI
CASH REGISTER
3. NO REFUNDS AF
4. PLEASE BE REAL
YOUR CASH REG
UPON REQUES


URBAN ORE's
BUILDING MATERIALS
BOUGHT

ReSource, Burlington, VT

ReSource, Burlington, VT

ReSource, Burlington, Vermont



ReSource, Burlington, Vermont


ReSOURCE
RIDGID


FIRST AID

Reuse & Repair Centers

- Some examples on videotape at
- www.AmericanHEALTHstudies.org

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 and
- Make reuse and recycling FUN!

Kretsloppsparken – the Reuse Park in Gottenburg, Sweden.


Återbruket
Här kan du lämna hela och användbara:
Returhuset
Exempel
MYRORNA
18/09/2010 11:51


18/09/2010 12:21


GÖTEBORGAREN
15/04/2011 03:59


kan
Fa
xe
sor
te
ra
18/09/2010 11:24

STEPS 6 – 9
Attempt to minimize the residual fraction

STEP 6.

$$$
Economic Incentives

The “Pay As You Throw” system

free

free

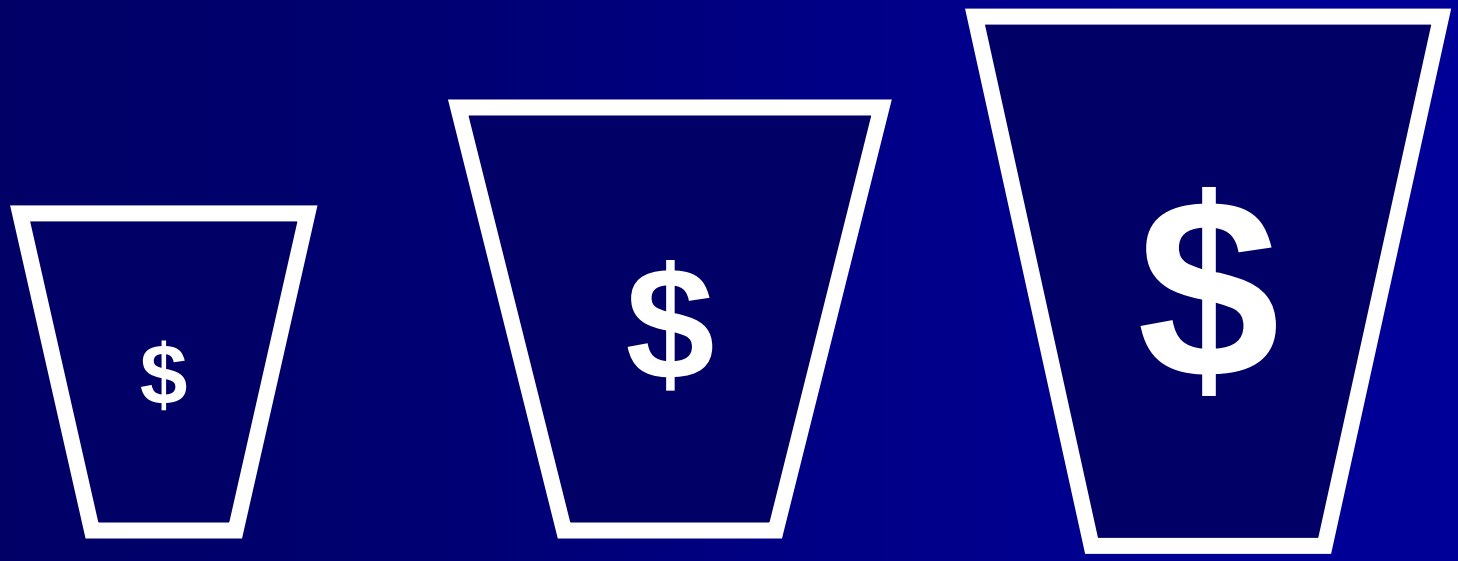
The “Pay As You Throw” system

free

free

The more you make the more you pay!

Seattle, Citizens choose which size container they use for residuals




Dal PORTA A PORTA
alla TARIFFA PUNTUALE
LAMMARI
da mercoledì
25 luglio 2012
ASCIT
Comune di
Capannori

STEP 7.

More Waste Reduction Initiatives

How close can we get to Zero Waste using steps 1-7?

1. Source Separation

2. Door to Door Collection

3. Composting

4. Recycling

5. Reuse, Repair, Research & Community Centrs

6. Economic Incentives

7. Waste Reduction Initiatives

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!)**

Flanders

Flanders

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

Italy

Italy

- Over 1,000 communities achieving over 70% diversion
- Around 300 over 80%
- And a few over 90%
- And they are reaching these diversions very quickly

Going beyond 80% diversion

To get closer to Zero Waste we need industrial support

Step 8
Getting closer to Zero Waste

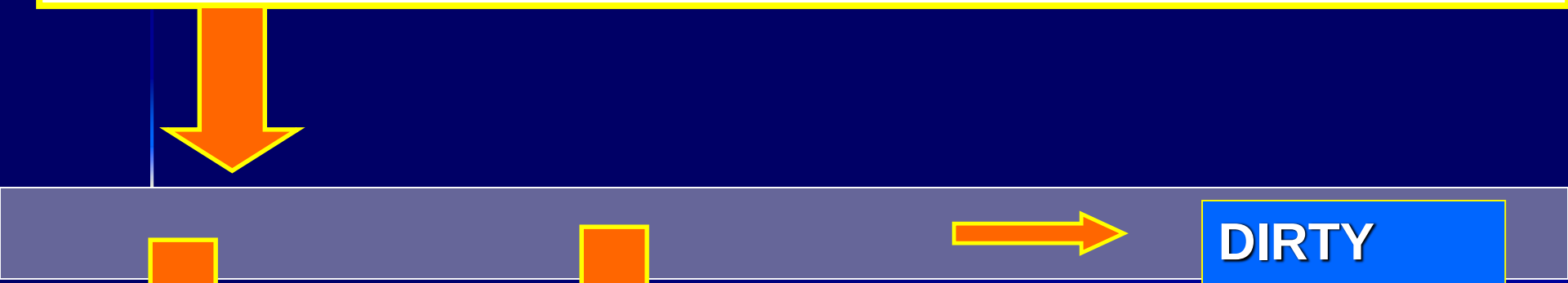
8A. The Residual Separation Facility

Nova Scotia, Canada

- Has built residual separation facilities IN FRONT of its landfills


sundancerphoto

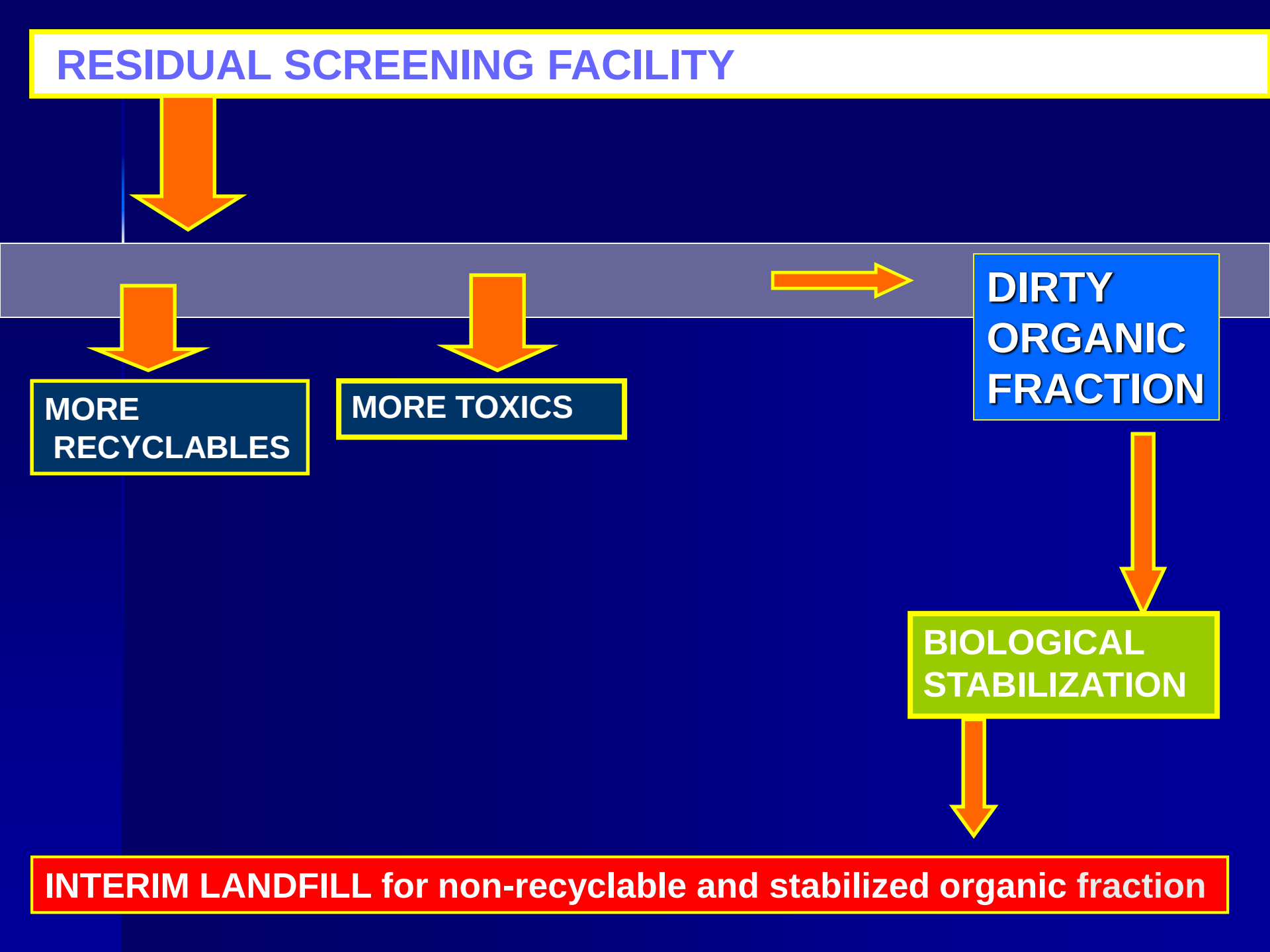
RESIDUAL SCREENING FACILITY



MORE RECYCLABLES

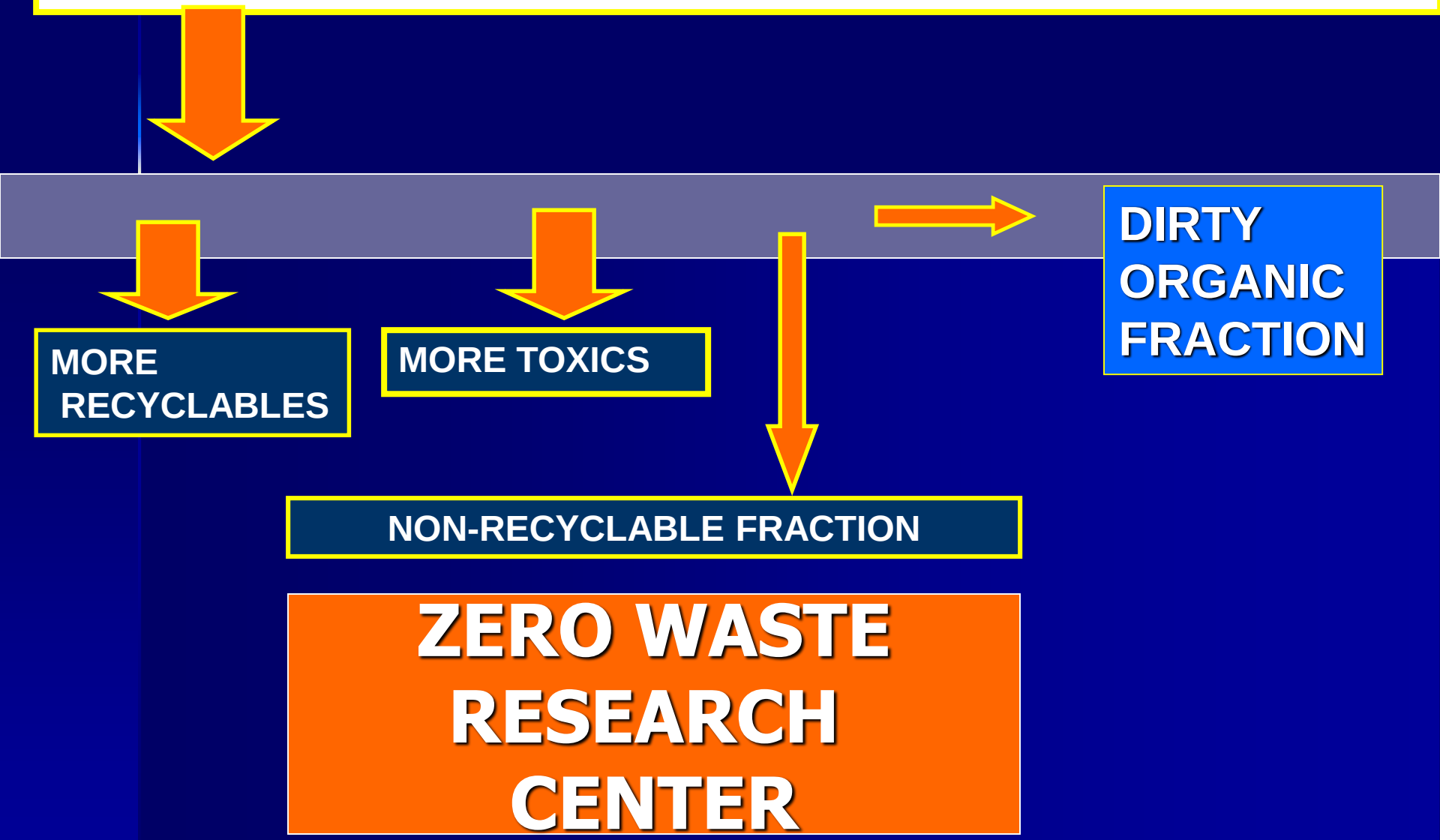
MORE TOXICS

DIRTY ORGANIC FRACTION


RESIDUAL SCREENING FACILITY
MORE RECYCLABLES
MORE TOXICS
DIRTY ORGANIC FRACTION
BIOLOGICAL STABILIZATION
INTERIM LANDFILL for non-recyclable and stabilized organic fraction

8B.
THE ZERO WASTE RESEARCH CENTER

RESIDUAL SCREENING & RESEARCH FACILITY



NON-RECYCABLE MATERIALS

Local University

Or Technical College

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

ZERO WASTE

Community Responsibility
= Reduce, Reuse,
Recycle/Compost

Industrial Responsibility
= Re-Design

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. Economic Incentives

7. Waste Reduction Initiatives

8. Residual Separation & Research Center

9. Better Industrial Design

10. Interim Landfill

2030

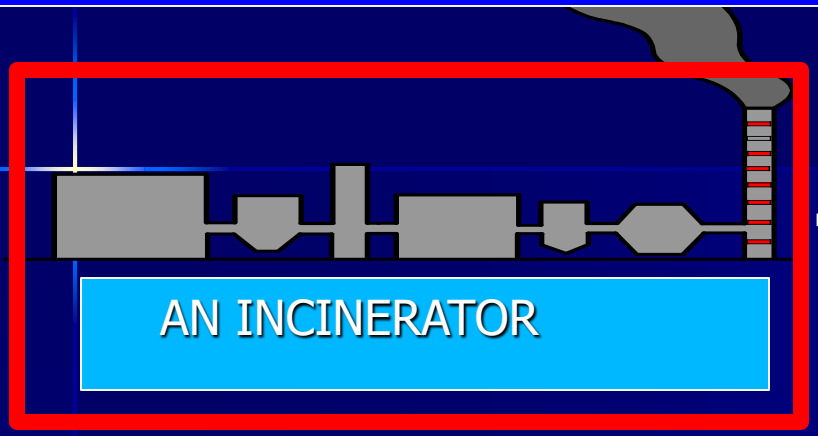

Source Separation
Door to Door Collection
Composting
Recycling
Reuse, Repair & Community Center
Economic Incentives
Waste Reduction Initiatives
Residual Separation & Research Center
Better Industrial Design
Temporary Landfill
2030

We need our brightest minds

- To link ZW successes to other aspects of SUSTAINABILITY


Sustainable Agriculture
Education For Sustainability
Sustainable Architecture
Sustainable industries & Jobs
Zero Waste 2030
Sustainable Energy
Sustainable Community development
Sustainable Economic development

Comparison between Incineration and Zero Waste



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TOXIC ASH
Landfill

Steps 1 - 7
+
8.A RESIDUAL SEPARATION FACILITY

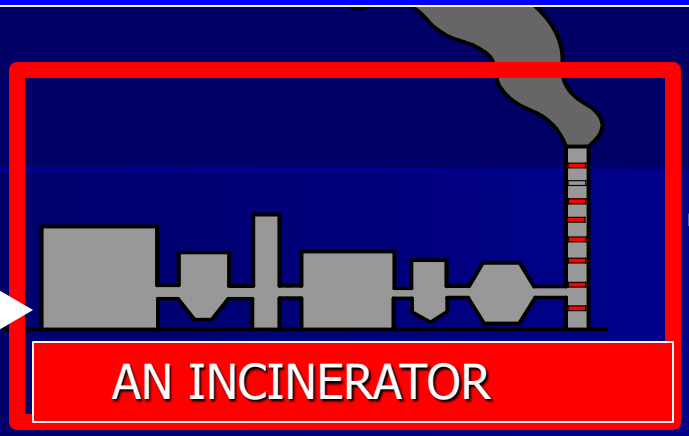
8.B ZERO WASTE RESEARCH CENTER

10. Interim landfill for the stabilized organic fraction and non-recyclable material

9. Better industrial design of currently non-recyclable objects and materials

Comparison between Incineration and Zero Waste

Steps 1 – 7



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TOXIC ASH Landfill

8.A RESIDUAL SEPARATION FACILITY

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ZERO WASTE

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

Three Final Messages

Three final messages on waste and sustainability

1) To Citizens…

Don't let the experts take your "common sense" away

2) To Politicians…

Put your faith back in people. Stop trying to solve your social problems with "magic" machines

3) To Activists…

Have FUN!!!!

The Battle Hymn of Garbage

While we recognize our landfills all are swelling with the waste

That doesn't justify a bad decision made in haste

Let us put our heads together

So the problem may be faced

And we must do it NOW

The Battle Hymn of Garbage

(Chorus)

We don't want incineration

We don't want incineration

We don't want incineration

We know there's a better way!

The Battle Hymn of Garbage

Mine eyes have seen the garbage
That's a smoldering on the grate
We must stop incineration
Before it is too late
Unless we wish the dangers
We had better separate
And we must do it now!

The Battle Hymn of Garbage

(Chorus)

We don't want incineration

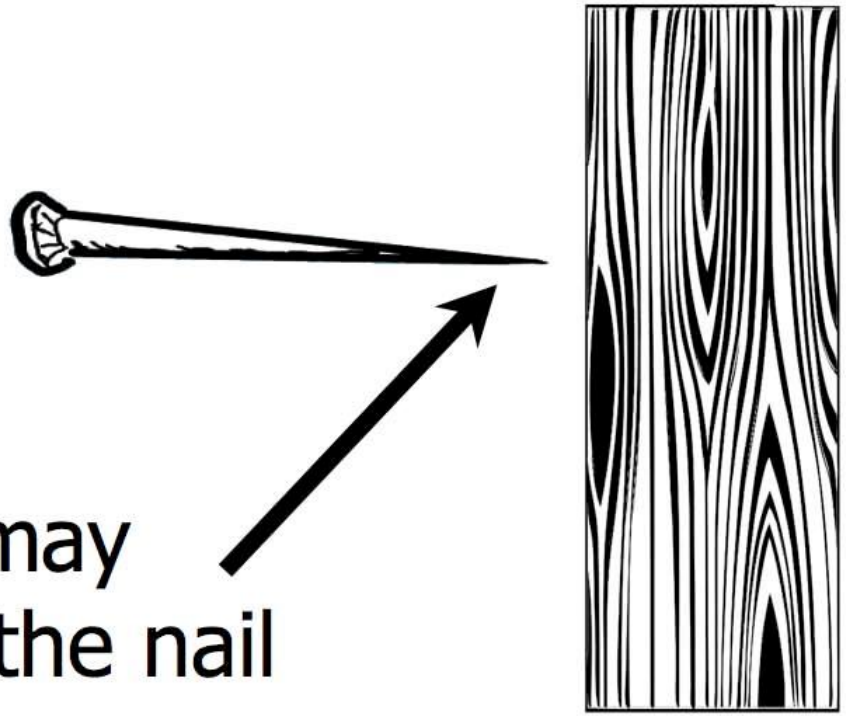
We don't want incineration

We don't want incineration

We know there's a better way!

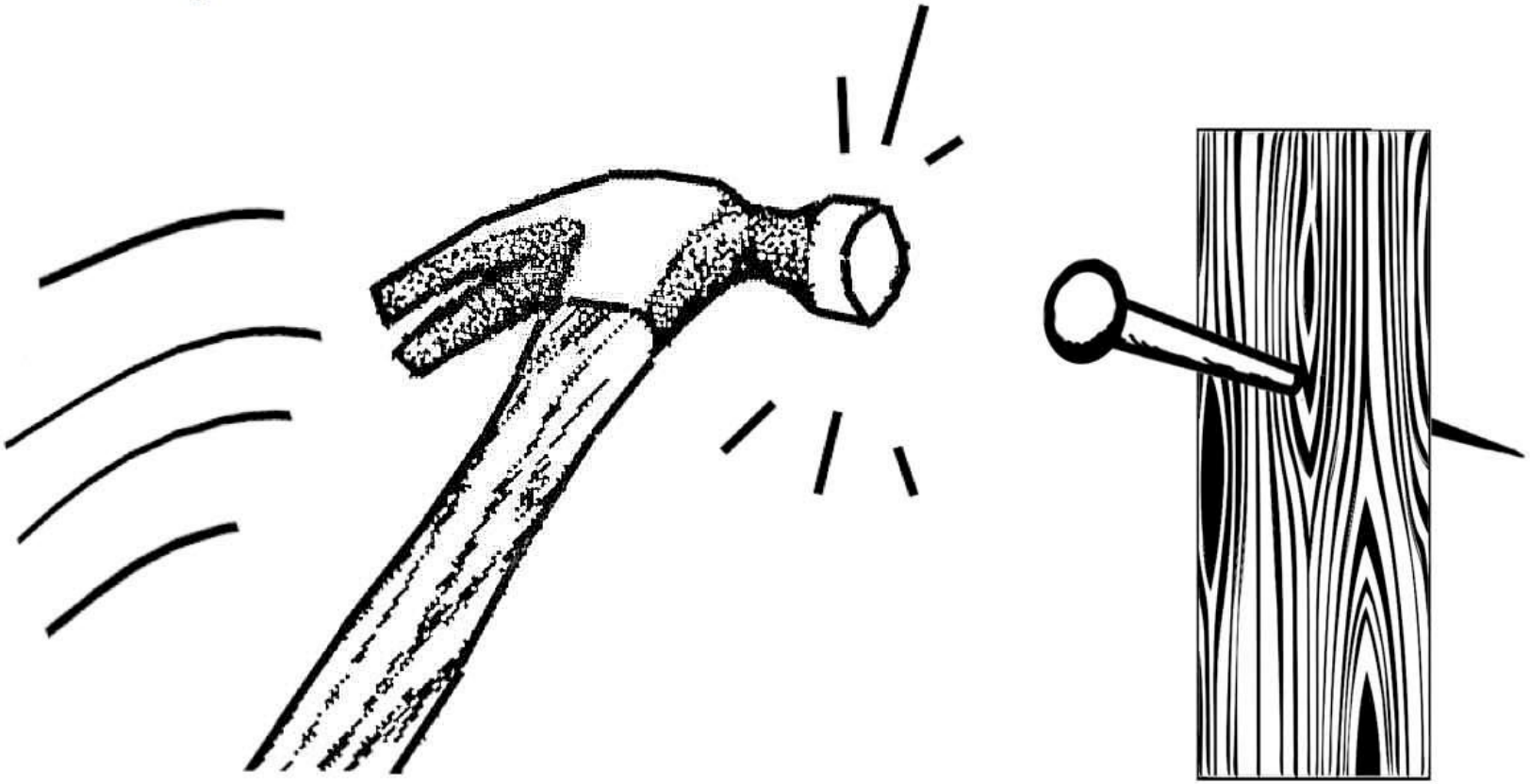
Effecting Change

Effecting change is like driving a nail through a piece of wood



Effecting Change

But you need the hammer of public opinion to drive the nail home



This submission also attached the following documents:

- NSW Lower House petition
- NSW Upper House petition
- A community survey

These documents have not been uploaded to the Commission's website as they contain a large amount of personal information. If you would like to view these documents they are available at the Independent Planning Commission's offices.