

# Community Mapping in Public Spaces

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**TOOLS AND INFORMATION FOR DEVELOPING  
AN ENVIRONMENTAL JUSTICE CURRICULUM**

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higher education  
& training

Department:  
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Education  
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TRANSFORMING EDUCATION



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## INTRODUCTION

This workbook presents a collection of tools that was used as part of participatory action research to develop an environmental justice curriculum in communities surrounding the Missionvale Campus of NMMU in Nelson Mandela Bay. It should be used together with the Workbook for Community Investigators. The report: "Environmental Health and Waste in the Community: developing an environmental justice curriculum" sets out the findings from this community investigation

Community-based participatory research enables democratic agendas to emerge at local levels to challenge oppression linked to exploitation, marginalisation, cultural dominance, powerlessness and violence. This form of Community Education exists neither to help people enter into the workplace, nor to place profit as the main objective. Instead it focuses on education that benefits the whole of society and nature. It is an education which works to bring about social transformation.

The tools assist groups to investigate environmental health issues in general and waste specifically. The tools are accompanied by a section providing brief background information for groups to consider prior to a community mapping exercise.

These investigations are part of a process to build community intervention and learning circles (CLICs). Through this work we wanted collectively to explore in more depth the issues of environmental health and waste as they are situated within an environmental justice framework.

### The mapping process investigates:

- The experiences of environmental injustice and its relationship to the environmental health of the communities we are investigating. This includes observing the natural and built environment and interviewing community members to uncover the ways in which people are affected by environmental injustice and the attendant health implications.
- The management of waste at a local level and include an examination of the work of waste pickers as well as local recycling initiatives. This provides emerging idea of the current state of waste management in these communities – as it applies to both local government and community/household based processes.
- The results of the investigation are reported back through a community education event, open to any interested member of the community. The investigation group shares what they learnt with other community members, facilitating dialogue and shared decision-making around how to build possible interventions to address shared problems.



Community education is education which works to bring about social transformation



# OBSERVATION TOOLS FOR PUBLIC SPACES - MAPPING

## Environmental Health Hazards

<b>Area</b>				
<b>Name</b>				
<p><b>Using your map and a pen document environmental health hazards in the area</b></p> <ul style="list-style-type: none"> <li>• by marking the hazard you observe on your map.</li> <li>• change the size of the shape to show how big the problem is a bigger shape = a bigger problem</li> </ul>				
<p><b>Environmental health hazards</b> can be divided into the following groups: biological, chemical, physical, mechanical, social</p>				
<p>Use the following symbols to indicate the presence of a hazard</p>				
Biological	Social	Physical	Mechanical	Chemical
				
<p><b>Jot down your observations</b></p>				
<p>Write down very short notes about the hazard you are observing</p> <ul style="list-style-type: none"> <li>• Describe the physical setting</li> <li>• Describe activities happening in the setting</li> <li>• Describe behaviours you are noticing</li> <li>• Describe any relationships (for example: between people; between people and environment; between people and local authority)</li> </ul>				



# OBSERVATION TOOLS FOR PUBLIC SPACES - MAPPING

## Patterns of Waste in public spaces

<b>Area</b>	
<b>Name</b>	
<b>Mapping patterns of waste dumping in the area</b>	
Along your route, indicate on your map in which areas waste collect	
<ul style="list-style-type: none"> <li>• Mark the area by using a number of crosses</li> <li>• A large number of crosses together will indicate a high density of waste in an area</li> </ul>	
<b>Jot down your observations</b>	
Write down a short description of the waste dumping site you are observing	
<ul style="list-style-type: none"> <li>• Describe the physical setting</li> <li>• Describe activities happening in the setting</li> <li>• Describe behaviours you are noticing</li> <li>• Describe any relationships (for example: between people; between people and environment; between people and local authority)</li> </ul>	
<b>Take pictures</b>	
Make sure to take photographs of the waste dumping site you are observing.	
Make sure that you have permission to take the picture if it includes people or children that could easily be identified	
<p>Make sure your group take pictures of the waste that show:</p> <ul style="list-style-type: none"> <li>• the scale of the waste</li> <li>• the surrounding environment of the waste dumping area</li> <li>• the types of waste</li> <li>• any activity connected to the waste</li> </ul> <p><b>For example:</b> evidence of burning waste; animals eating amongst the waste; black plastic bags that are ripped open; people picking through the waste; children playing in the area where waste is dumped or processed</p>	
Make sure that you document where the picture was taken (street name; name by which people know the area)	

## OBSERVATION TOOLS FOR PUBLIC SPACES - MAPPING

<b>Area</b>				
<b>Name</b>				
<b>Listing environmental health agents in an area</b>				
<p>Are any of the following agents of environmental health hazards present in the public space you are observing?</p> <p>Use a x to indicate that the agent is present; Use one x if the agent is present in the space and increase the number of crosses to show how big the problem is</p> <p>Add into the same block the source of the agent you are observing (households; informal business; small business; industry; local government activities)</p>				
<b>Biological</b>	<b>Social</b>	<b>Physical</b>	<b>Mechanical</b>	<b>Chemical</b>
human faecal matter	unsupervised children	heavy traffic	unsafe equipment	smoke from burning waste
animal faecal matter	gangs	stagnant water	heavy lifting	polluted dust from old fires
insect infestation (lice, fleas, flies, mosquitoes)	drugs	unsafe electricity connections		air pollution from factories
rodent infestation (rats and mice)	illegal activities	unsafe buildings		tyres
mould (fungi and mildew)		unsafe public spaces		paints
animal carcasses		building materials (asbestos)		old batteries
plant matter		unsafe working environments		bottles
paper				packaging

# OBSERVATION TOOLS FOR PUBLIC SPACES – DIGGING DOWN

## Listing environmental health agents

<b>Area</b>				
<b>Name</b>				
<b>Mark off a square 1 meter by 1 meter using your poking and pegging sticks</b>				
List all the waste material you find. Use all your senses				
what you can see				
what you can smell				
what you can feel				
<b>Now list all the environmental health agents and their source in the square metre you are examining using the matrix below</b>				
<b>Type/source</b>	<b>Biological</b>	<b>Chemical</b>	<b>Physical</b>	<b>Social</b>
<b>Households</b>				
<b>Animal</b>				
<b>Industry</b>				
<b>Small business</b>				
<b>Informal business</b>				
<b>Local government</b>				
<b>Illegal activities</b>				
<b>Other</b>				



## OBSERVATION TOOLS FOR PUBLIC SPACES – DIGGING DOWN

Picture of sources/agents, vectors/pathways and effects

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**What do you see as an explanation for the situation that you observe?**

**Draw a picture showing the relationship between sources, agents, pathways and effects based on your observations.**

# OBSERVATION TOOLS FOR PUBLIC SPACES – DIGGING DOWN

## Square meter dig

Look through a square metre of waste left in a public space.



- Materials needed:**
- Hanging scale
  - 2 Wooden planks 1m
  - 3 Black plastic bags
  - Spade for scooping into bags

### Sort the waste into three piles

- Organic waste – waste that can decompose to make compost to feed the soil
- Plastic, metal and rubber waste that can be recycled
- Waste for disposal at a municipal dumpsite.

Place each pile into a black plastic bag, weigh and record the weight.

<b>Organic</b>		<b>Plastic, metal, rubber</b>		<b>Waste for municipal dump</b>
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Add together the total weight of the three piles

Calculate the percentage each group of waste contributes to the total amount of waste.

**For example:**

$$\frac{\text{Organic waste}}{\text{Total Waste}} \times 100 = ?$$

## OBSERVATION TOOLS FOR PUBLIC SPACES – CONVERSATIONS

### Interview Recycle and repurpose

<b>Area</b>	
<b>Name</b>	
<b>Recycled repurposed objects an area</b>	
<b>Note down what recycled/ repurposed objects you are seeing</b>	
<b>Interview community members using these objects and try to get answers to the following questions</b>	
<ul style="list-style-type: none"> <li>• <b>What recycled, or repurposed objects are you seeing?</b></li> <li>• <b>What are they used for?</b></li> <li>• <b>Who uses them?</b></li> <li>• <b>Where did they come from and how were they obtained?</b></li> <li>• <b>Who repurposed them?</b></li> <li>• <b>What is helpful or dangerous in their use?</b></li> <li>• <b>Who benefits from the use?</b></li> </ul>	

# OBSERVATION TOOLS FOR PUBLIC SPACES – CONVERSATIONS

## Interview Behaviours linked to waste disposal

<b>Area</b>	
<b>Name</b>	
<b>Behaviour linked to disposal of waste in public spaces</b>	
<b>Note down what behaviours or evidence of behaviours you are seeing</b>	
<p><b>Interview community members using to get understand the following issues.</b></p> <p>Who is dumping waste, collecting waste, recycling legally or illegally.</p> <p>Remember you are seeking to understand issues from the perspective of community members – you are not forming a judgement about the right or wrong of their perspective or behaviour.</p> <p><b>Ask people to tell you more about what they are doing. Start off by saying:</b></p> <ul style="list-style-type: none"> <li>• I see that you are .... (describe the behaviour factually)</li> <li>• Tell me more about this</li> <li>• Ask the person whether they think their behaviour is common or unusual?</li> <li>• Ask people where they think the behaviour has come from? What prompted the behaviour?</li> <li>• Ask people whether there was a time when things were done differently? If yes, ask what was done then and ask what changed the behaviour</li> </ul> <p><b>You want to understand:</b></p> <ul style="list-style-type: none"> <li>• How they are doing this or how they did this.</li> <li>• What motivates the behaviour you are observing</li> <li>• Where and when the behaviour started</li> </ul>	



# OBSERVATION TOOLS FOR PUBLIC SPACES – PERMISSION

## Community information sheet

### Information for community members



11 September 2013

#### Participant Information

My name is \_\_\_\_\_ and I am a participant in a Community Action Research Process through Centre for Integrated Post-School Education & Training (CIPSET) at the Nelson Mandela Metropolitan University (NMMU). We are trying to understand how issues of the environment and waste affect community members in this area. We want to use this information to develop free Community Education Programmes that support community members to look deeply at problems in the community and to act collectively to bring about change

I would like to invite you to talk briefly with me about some of these issues.

Please take time to read the following information carefully. You are welcome to ask me if you would like more information or if there is anything that you do not understand. I would like to stress that you do not have to talk with us and that you should only agree to take part if you want to. Thank you for reading this.

#### 1. Why is this study being done?

This is not just an academic research project - our work will create community education programmes that will be offered through in this community over the next three to four years. Participation in a learning group will be free and open to adults in this community.

What we learn from this work will also be used to inform a model for changing Public Adult Learning Centres in a district into Community Learning Centres. The new Community Learning Centres will offer learning programmes to adults on behalf of a district-based Community College. We are trying to understand what their work should be and how learning linked to a Community Learning Centre can be designed and organised to match the lived experience and needs of community members.

#### 2. Why have I been chosen to take part?

We are randomly talking to women and men, old and young, of this community. I am asking to talk to you because you are a member of this community, who I happened to meet today on our walk through the community.

## OBSERVATION TOOLS FOR PUBLIC SPACES – PERMISSION

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### 3. Do I have to take part?

You do not have to take part at all. Talking with me is your choice.

- 4. What will happen if I take part?** If you decide to take part, I will ask you three questions. There are no right or wrong answers to these questions. I am interested in understanding your point of view and experience. When you answer these questions, you should only share information you feel comfortable to share. You are not obliged to answer all the questions. If you feel uncomfortable to answer a question, you can simply ask me to pass on to the next question without needing to explain. To make sure that I can reflect your views as accurately as possible and in your own words, I would like to write down your answers. I would appreciate you checking if I have written down accurately what you said.

You should answer the questions in your mother tongue. When we use your answers in the research, we will write down the answers in your own words and add an English translation of your answer.

### 5. Are there any risks or benefits in taking part?

As far as I am aware there are no risks to you from participating in the research nor is there any direct benefit that will come to you personally from participation.

### 7. Will my participation be kept confidential?

Your participation will be kept confidential. You can choose if you would like me to use your name during the interview or afterwards in the research. If you ask me not to use your name at all, it will mean that you will be referred to by number and by area (for example: Participant 3, Missionvale). This keeps you from being recognisable in any writing we do about this work. If you choose that we use your name, we will refer to you by your first name only and by your area (for example: Lena, Missionvale).

### 9. What will happen to the results of the investigation?

The results will be published in the form of a report by NMMU and submitted to the Department of Higher Education and Training and to the Chemical Industries Education and Training Authority who fund this work. We will also use the results to develop learning programmes for this community. We will also be writing newspaper articles and articles in academic journals about our work.

### 10. What will happen if I want to stop taking part?

You can withdraw from the interview at any time. If in the middle of the interview you wish to end your participation, you should feel free to do so without needing to explain yourself.

### 11. Contact details

Here are the contact details as the principal researcher:

Ms Irna Senekal, NMMU - Missionvale Campus, Tel: +27 (0)41 504 3924, Fax: +27 (0)41 504 1833

## OBSERVATION TOOLS FOR PUBLIC SPACES – PERMISSION

### Permission to be interviewed/photographed

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**Date :** \_\_\_\_\_

**Name of the community:** \_\_\_\_\_

**Name and surname of the participant/** initials if s/he does not want her/his name to be used:

\_\_\_\_\_

**Cell/Phone number:** \_\_\_\_\_

**Address:** \_\_\_\_\_

### Permission to interview

*I certify that I am of legal age to give my consent to this interview and that I do this, understanding fully what my rights are in this process and that I participate willingly.*

*Signature:* \_\_\_\_\_

### Permission to use pictures

*I hereby give the NMMU (Nelson Mandela Metropolitan University) the absolute right and permission to publish, copyright and use pictures of me in which I may be included in whole or in part, composite or retouched in character or form.*

*If the person photographed is under 18, I certify that I am his or her parent or legal guardian and I give my consent without reservation to the foregoing on his or her behalf.*

*Signature:* \_\_\_\_\_

# CHECKLIST

## Transect Checklist

Activity/ Resources	Who	By when	Done ( ✓ )
Meeting venue to prepare, assemble on day, document after			
Preparatory meeting			
Informing organisations/structures of the walk			
Letter explaining the purpose of walk for each member			
Documentation tool for each member			
Name tags & lanyards			
Map A0 for group			
Maps A3 for each person in group			
Tracing paper			
Flip chart paper/ newsprint			
Pens			
Notebooks			
Clipboards			
Koki pens & crayons			
Masking tape			
Pritt			
Cameras			
Digital voice recorders			
Water/ refreshments for walk			
Transport			

# FOCUS GROUP DISCUSSION

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## 1. Focus group (FG) discussion process outline

### 1.1 Community mobilisation

- identify potential learners
- recruit by explaining CEP using pamphlet
- recruit to 10-15 community members to the focus group discussion

### 1.2. Set up focus group

- set date for FG discussion
- identify and book venue for FG discussion<sup>1</sup>
- request CEP office to sms FG discussion invite to interested community members
- coordinate numbers and refreshments with the office

### 1.3. Introduce FG discussion process

- take register and confirm willingness to participate
- introduce note taker and purpose of note taker; introduce self and clarify your own role as a facilitator
- use ice-breaker to get FG participants to introduce themselves
- explain no benefits, but considered potential learner
- explain purpose of FG discussion
- explain how the FG will take place: first exploration of issues and then a ranking exercise
- start discussion

### 1.4. Conduct FG discussion

- work through each topic
- introduce the generative theme and the intervention area
- ask FG participants to think through each possibility for intervention
  - the group should describe the intervention
  - (who is involved; where it will take place; for how long it will go on; what else might grow from the intervention)
  - the group should add what resources exist in the community to support the intervention and who is already working around this)
  - the group should add what the experience in the community is of similar interventions and what potential obstacles might be
- explain that the next part of the FG discussion is a ranking exercise; note taker to note colour of each vote if not green and orange
- each FG to gets 3 votes (stickers) which they can spread across 2 or 3 possibilities or concentrate their votes in a single option by placing all their stickers with one option
- hand out 3 stickers (green) to each participant. Ask them to use these votes to identify what possibilities for intervention excite them most

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<sup>1</sup>Check feasibility of booking a large venue in each area on consecutive days and running all the FG simultaneously (so three or four focus groups in one area all using the same venue, but working in different parts of the same venue independently from one another with support from their own facilitators and note takers; it might be easier for office to provide support

## FOCUS GROUP DISCUSSION

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- hand out 3 stickers (orange) to each participant. Ask them to use these votes to identify what possibilities for intervention they think is most feasible – what can practically be done within a reasonable timeframe with limited additional resources
- once all the ‘votes’ have been cast, ask participants to comment on what ‘picture’ is emerging:
  - where lies the strongest excitement
  - what options appear most feasible
  - what is similar or different about excitement votes and feasible votes and why do participants think this is the case
- be sure to write down these views

### 1.5. Closure

- thank participants for their efforts during the day
- explain what the next steps are
  - report back from four different areas and all the focus groups in those areas
  - the collation of all the different views and development of area-based proposals
  - the finalisation of area-based plans with potential community learners
  - a mass education event to introduce the proposed interventions to the wider community and gain their support
- share dates for the next meeting
- make sure all documentation is up to date (register with contact details that are clear and legible; sheets for each intervention area and its possibilities; notes on discussion from ranking exercise)

## 2. Resources Checklist

- pamphlets explaining CEP and process for developing interventions
- recruitment slips to register individual details and agreement to participatee
- attendance registers at FG discussion
- visual display of generative themes and intervention areas and possible interventions
- for participants: pens, paper
- printed a1 posters for note taking that sets out generative theme, intervention area and possible interventions and elements the group needs to unpack; summary of ranking votes
- stickers in two different colours for ranking
- news print to capture discussion after ranking
- koki pens
- name tags
- press stick
- masking tape

## FOCUS GROUP DISCUSSION

<b>Generative Theme</b>	<b>Food and Hunger</b>			
<p>(A generative theme is a cluster of ideas, concepts, experiences and hopes that connect deeply with the lives of community members. It shows up a contradiction or tension in how the world is organised. It suggests possibilities for action to change the world)</p>	<p>How is it possible that we live in a world that produces enough food to feed everyone, yet there is hunger in the world amongst a great many people?</p> <p>What possibilities exist at this moment in history to change this situation?</p>			
<b>Intervention area</b>	<b>Possibility for intervention</b>	<b>Description</b>	<b>Resources</b>	<b>Obstacles</b>
<p>How can we support people in this community to access healthy food?</p>	Community collectives to buy basic foods in bulk			
	Community Gardens			
	Soup kitchens for vulnerable families			
	Other ideas			
	Other ideas			

## FOCUS GROUP DISCUSSION

Generative Theme	Environmental Justice			
<p>(A generative theme is a cluster of ideas, concepts, experiences and hopes that connect deeply with the lives of community members. It shows up a contradiction or tension in how the world is organised. It suggests possibilities for action to change the world)</p>	<p><b>How are environmental risks concentrated in poor communities and why does this situation happen?</b></p> <p><b>What possibilities exist at this moment in history to change this situation?</b></p>			
Intervention area	Possibility for intervention	Description	Resources	Obstacles
<p>How can we support people in this community to access healthy food?</p>	<p>Create safe streets with sidewalk activities and supervised play for young children</p>			
	<p>Improve school grounds and provide supervised play activities</p>			
	<p>Campaing to remove dumping and burning of waste near schools and creches</p>			
	<p>Other ideas</p>			
	<p>Other ideas</p>			

## BACKGROUND INFORMATION

### Vocabulary

Agent	the cause of the environmental health hazard
Ecosystem	a system within nature that includes all life forms in a naturally balanced and mutually supportive arrangement
Environment	everything that is around us and that can affect our health, life, growth and well-being or that of plants and animals, and of the earth as a living system
Environmental Health	all factors including hygiene and sanitation, but also factors like climate change and global warming that affect human wellbeing or the well-being of the earth as a living system
Fomite	fomites are inanimate objects that carry the infectious agent (e.g. dishes, cups and other contaminated surfaces in contact with food or water)
Gas	Vaporous form of a chemical released when burnt or during decomposition or during manufacturing processes
Hazard	a hazard is something which is known to cause harm, that is, a source of danger to people's physical, mental or social wellbeing; or to the environment –air, water, soil, all forms of natural life
Heavy Metals	the chemical compounds of metals that in their pure form have a very high density and which in their compound form accumulate in other life forms and in humans and animals can lead to cancer and hormonal disruption
Hygiene	set of practices associated with the preservation of health and healthy living
Leachate	chemical compounds from waste decomposition that are dissolved in water or present in a liquid form and in this form travel into water and soil systems
Pathways	routes and processes through which a hazard is conveyed from the source to the receptor
Pollution	the introduction of contaminants into an environment causing harm, instability or disorder to the ecosystem
Receptor	the person or living being affected by the hazard
Risk	risk is the likelihood or chance of the hazard happening and the scale of the follow-on effect
Sanitation	prevention of human contact with hazards associated with the lack of healthy food, clean water and healthful housing
Solid waste	waste that does not decompose naturally once buried or compressed in a landfill
Solvents	strippers, cleaners and other chemicals used to extract or clean things
Toxicity	the extent to which something is poisonous to other forms of life
Vector	living organisms that transmit diseases
Waste	any part of a product that is discarded after consumption of the product; any by-product of an industrial process

## BACKGROUND INFORMATION

### Components of hygiene and environmental health

(Source: Open University; <http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=187section=8.4.3>)

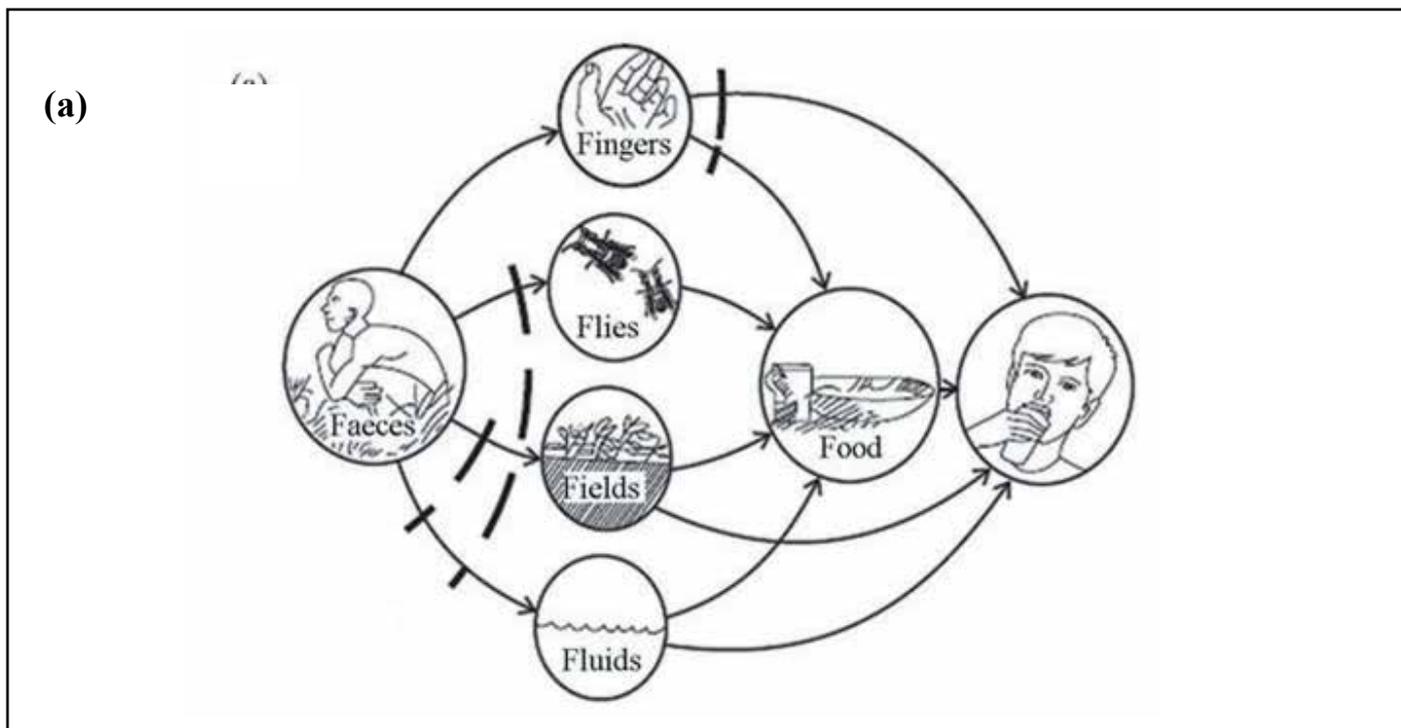
Description	Concerns
Personal hygiene	Hygiene of body and clothing
Water supply	Adequacy, safety (chemical, bacteriological, physical) of water for domestic, drinking and recreational use
Human waste disposal	Proper excreta disposal and liquid waste management
Solid waste management	Proper application of storage, collection, disposal of waste. Waste production and recycling
Vector control	Control of mammals (such as rats) and arthropods (insects such as flies and other creatures such as mites) that transmit disease
Food hygiene	Food safety and wholesomeness in its production, storage, preparation, distribution and sale, until consumption
Healthful housing	Physiological needs, protection against disease and accidents, psychological and social comforts in residential and recreational areas
Institutional hygiene	Communal hygiene in schools, prisons, health facilities, refugee camps, detention homes and settlement areas
Water pollution	Sources, characteristics, impact and mitigation
Occupational hygiene	Hygiene and safety in the workplace

# BACKGROUND INFORMATION

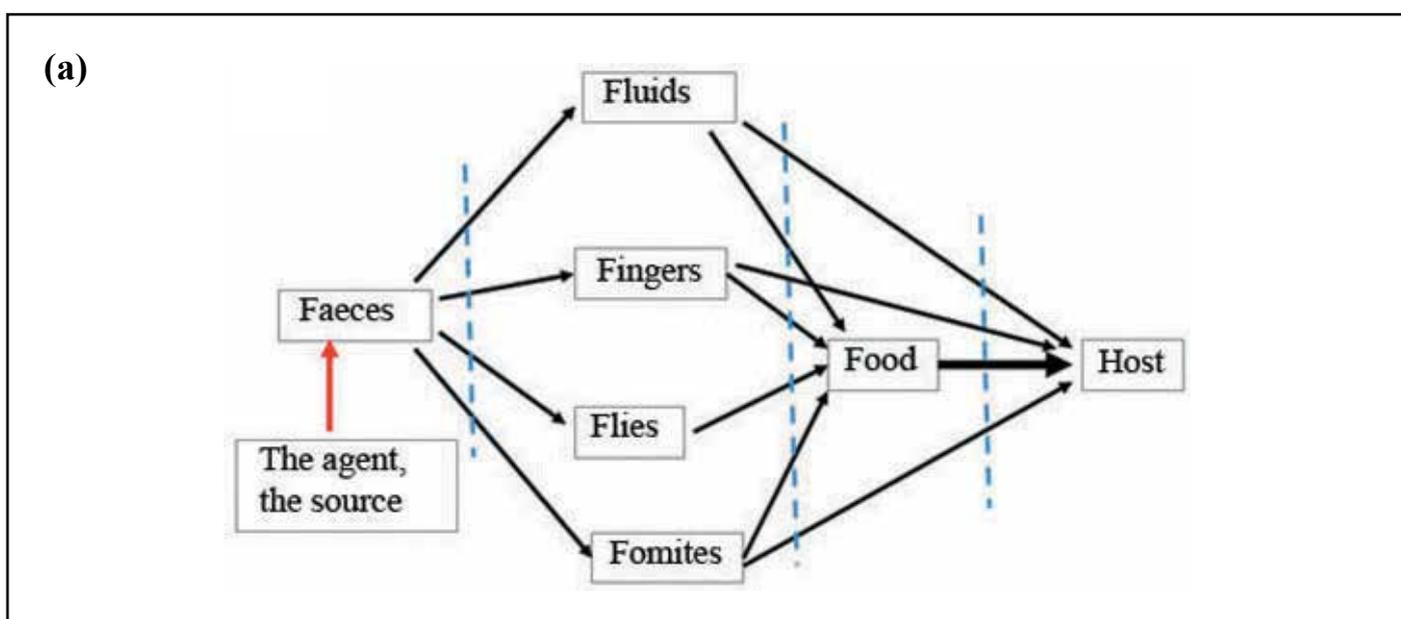
## Pathways of diarrhoea transmission

Adapted from WHO, 1998, PHAST step-by-step guide)

Interventions to change the situation can happen at the source, along the pathway or by controlling the vectors and at the host



(Source: Open University [http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=187&extra=thumbnail\\_idp31804272](http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=187&extra=thumbnail_idp31804272))



(Source: Open University [http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=187&extra=thumbnail\\_idp31809328](http://www.open.edu/openlearnworks/mod/oucontent/view.php?id=187&extra=thumbnail_idp31809328))

## BACKGROUND INFORMATION

### Environmental health hazard exposure

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Exposure to an environmental health hazard can be described by looking at the following elements

#### Example:

- The **source** is faeces from open defecation or poor waste disposal
- The **type** of hazard is biological, in this case faecal matter.
- The **pathway** is through contamination of fingers or of water sources for drinking or watering of vegetable gardens as a source of drinking water; the **exposure** takes place by touching food during preparation and eating or by eating food contaminated by polluted water or by drinking contaminated water.
- The **response** is that people who consumed contaminated food or water may become contaminated by bacteria such as salmonellae which produce severe gastroenteritis; protozoa and worms, which contribute to diarrhoea and interrupt the absorption of nutrients by the body; or through viruses such as hepatitis A, the polio virus or the Coxsackie virus which produces flu like symptoms and rashes.

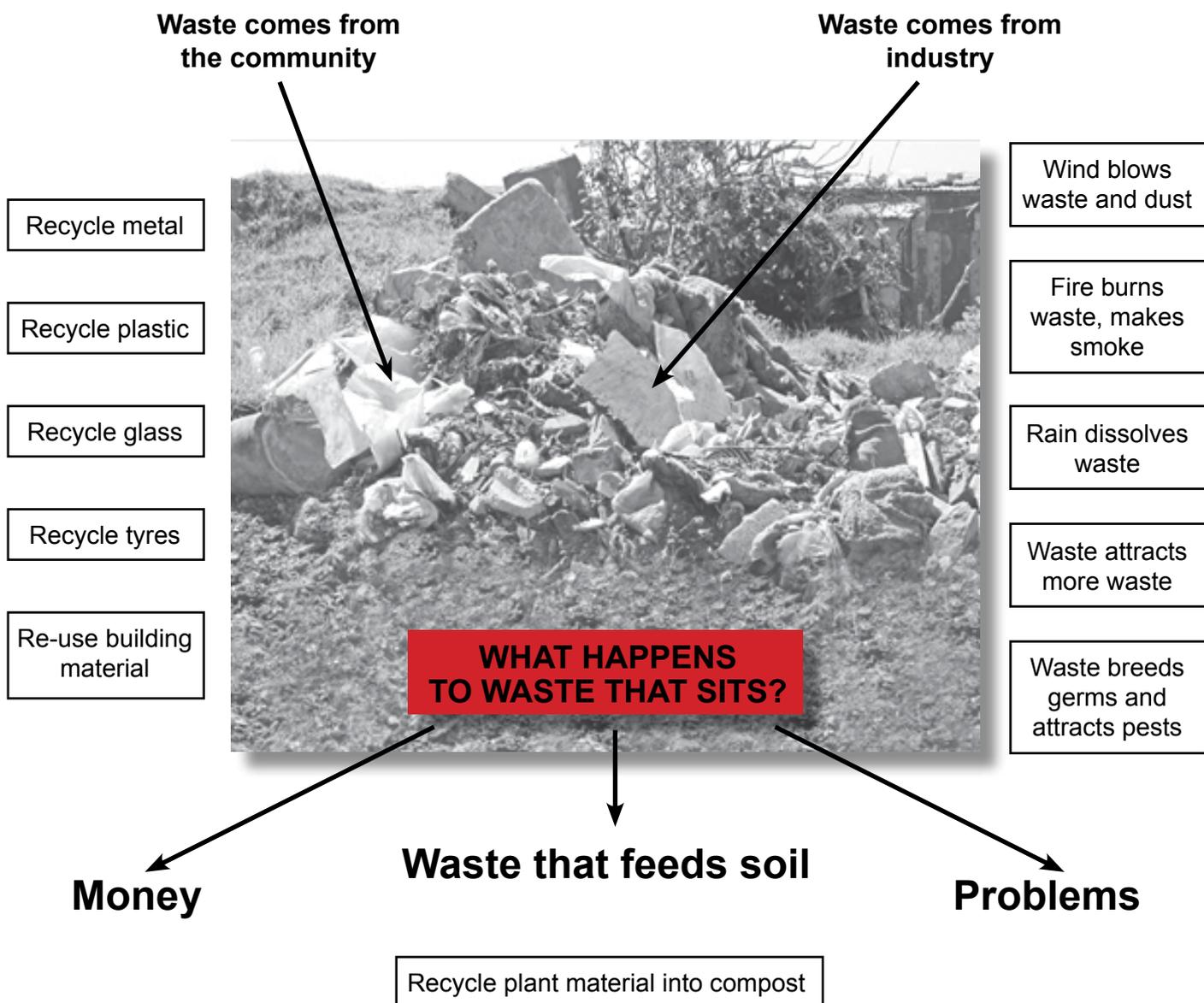
#### Example:

- The **source** is a waste transfer site, including plastics
- The **type** of hazard is chemical, in this case plastics. When plastics are incinerated, buried or left in the environment as litter, they break down and release harmful chemicals.
- The **pathway** is through leachate, particles and gasses from decomposing plastics. These pollutants include heavy metals such as cadmium and lead, and chemicals such as benzene, dioxins, and other pollutants, which all release harmful toxins into our air, water, and bodies. Humans living close to the transfer site might be affected through air pollution. Fish, frogs, birds, plant life and animals that graze in the area might be affected through the water that support their living environment. In animals there is a build-up of toxins in fatty tissues or in milk.
- The **response** is that people who consumed the contaminated animal or plant material will find a build-up of heavy metals and other toxins in their bodies which could lead to some forms of cancer and disruption of normal hormonal processes

# BACKGROUND INFORMATION

## Thinking about waste

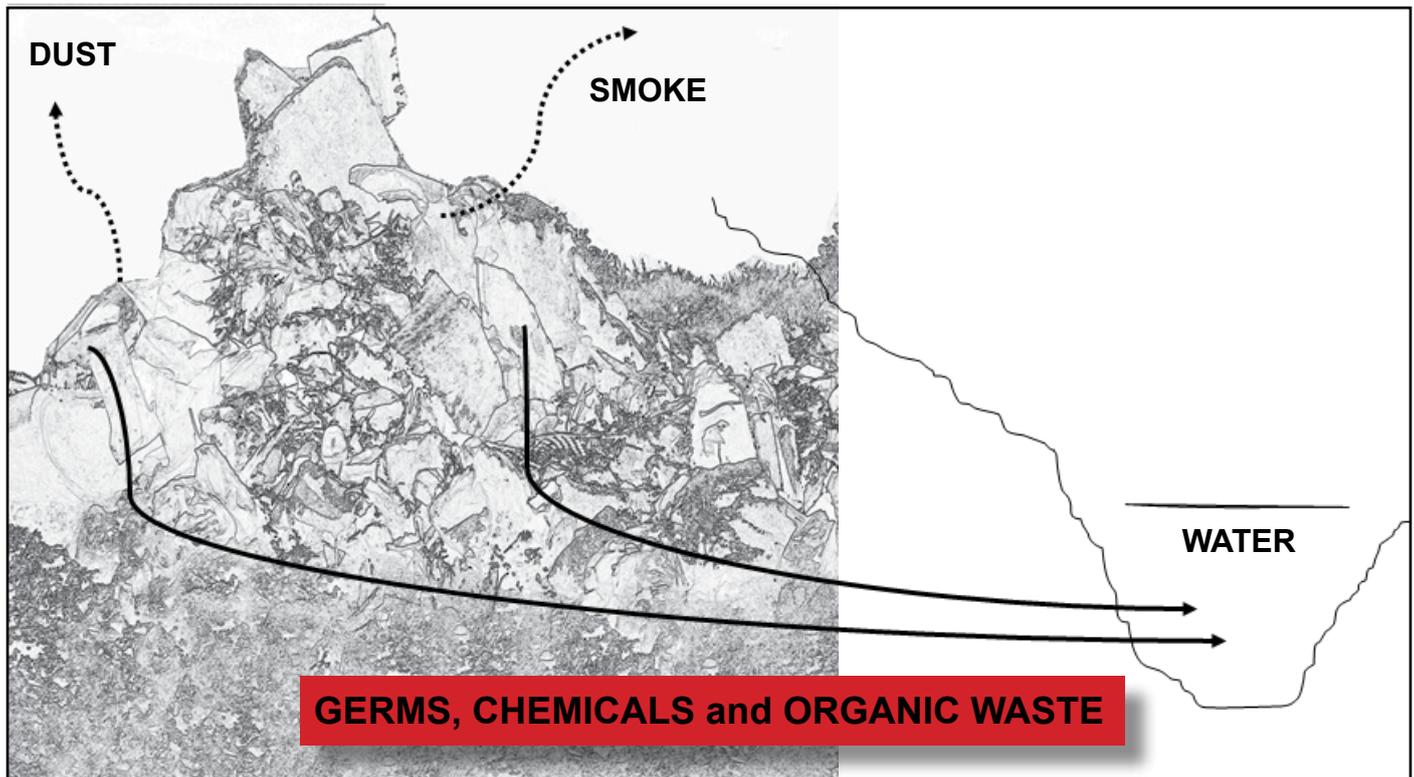
We see waste that is dumped and we think: Ughh! That is so bad! But there is a lot more to think about



## BACKGROUND INFORMATION

**Germs and toxic gasses are carried by smoke and wind**

**Germs and toxic liquids leach through the soil**



## BACKGROUND INFORMATION

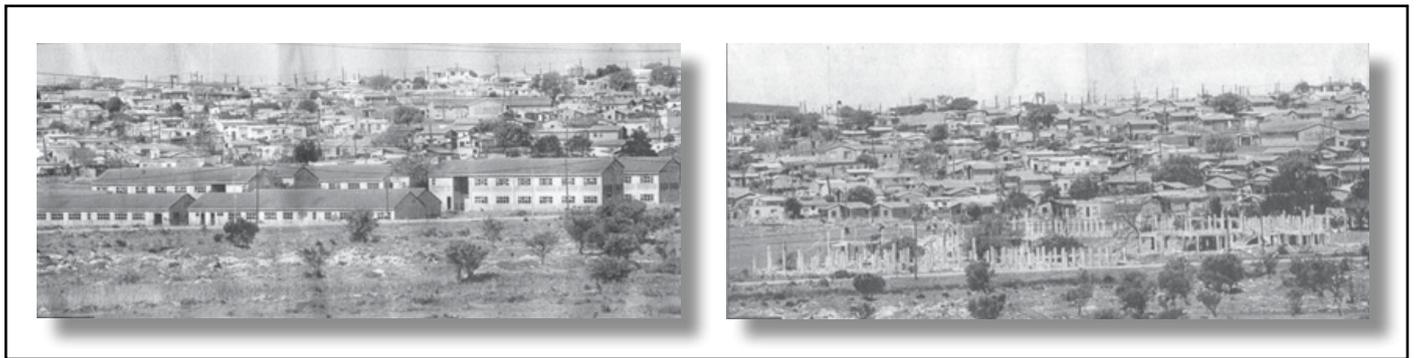
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### Re-using

This is when we take waste objects and use them again. Re-using can turn waste into a resource for generating income.

Re-using can also protect the environment by removing the need for taking the raw materials used in the object from nature.

Re-using can stretch household resources.



### Recycling

This is when we take broken waste objects, cut them up and change them back into new objects in a factory e.g. old car tyres are cut up into small chips and used to make new roads. We can make money by selling these things to companies:

Metal waste such as aluminium, copper and steel go to scrap yards, like “Chicks.”

Glass bottles are collected for recycling.

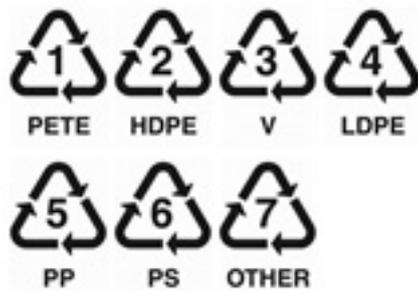
Tyres are collected – The municipal dump at Arlington pays R1.50 per kilo for old tyres and sells this on to companies who recycle.

Plant material can be recycled into compost. The municipal parks department and many gardeners do this.

## BACKGROUND INFORMATION

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There is a big demand for plastic to recycle into bottles, plastic wood for furniture and more products. When plastic items are recycled, they get chopped up into pellets at a factory. The pellets are raw materials which are then melted into a liquid and re-molded into new items.



Not all plastics can be recycled back into raw materials because they do not melt.

The plastic recycling codes 1 to 6 tell us that these items can be melted and re-molded,

they are called **thermoplastics**.

Code 7 is all other plastics, most of which cannot be melted and re-molded.

Such plastics are called **thermosetting** and include large items such as TV cases, and computer screens.

## BACKGROUND INFORMATION

### What plastic labels mean



#### Plastic #1 – PETE or PET (Polyethylene Terephthalate)

- Picked up by most curb side recycling programs, plastic #1 is usually clear and used to make soda and water bottles. Some consider it safe, but this plastic is known to allow bacteria to accumulate.
- It's found mostly in soda bottles, water bottles, beer bottles, salad dressing containers, mouthwash bottles, and peanut butter containers.
- Plastic #1 is recycled into tote bags, furniture, carpet, panelling, fibre, and polar fleece.

#### Plastic #2 – HDPE (High Density Polyethylene)

- Plastic #2 is typically opaque and picked up by most curb side recycling programs. This plastic is one of the 3 plastics considered to be safe, and has a lower risk of leaching.
- It's found mostly in milk jugs, household cleaner containers, juice bottles, shampoo bottles, cereal box liners, detergent bottles, motor oil bottles, yogurt tubs, and butter tubs. milk jugs, detergent bottles, juice bottles, butter tubs, and toiletries bottles are made of this. It is usually opaque. This plastic is considered safe and has low risk of leaching.
- Plastic #2 is recycled into pens, recycling containers, picnic tables, lumber, benches, fencing, and detergent bottles, to name a few.

#### Plastic #3 – V or PVC (Vinyl)

- Plastic #3 is used to make food wrap, plumbing pipes, and detergent bottles, and is seldom accepted by curb side recycling programs. These plastics used to, and still may, contain phthalates, which are linked to numerous health issues ranging from developmental problems to miscarriages. They also contain DEHA, which can be carcinogenic with long-term exposure. DEHA has also been linked to loss of bone mass and liver problems. Don't cook with or burn this plastic.
- It's found in shampoo bottles, clear food packaging, cooking oil bottles, medical equipment, piping, and windows.
- This plastic is recycled into panelling, flooring, speed bumps, decks, and roadway gutters.

## BACKGROUND INFORMATION

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### Plastic #4 – LDPE (Low Density Polyethylene)

- Low density polyethylene is most found in squeezable bottles, shopping bags, clothing, carpet, frozen food, bread bags, and some food wraps. Curb side recycling programs haven't been known to pick up this plastic, but more are starting to accept it. Plastic #4 rests among the recycling symbols considered to be safe.
- This plastic is recycled into compost bins, panelling, trash can liners and cans, floor tiles, and shipping envelopes.

### Plastic #5 – PP (Polypropylene)

- Increasingly becoming accepted by curb side recycle programs, plastic #5 is also one of the safer plastics to look for.
- It is typically found in yogurt containers, ketchup bottles, syrup bottles, and medicine bottles.
- Polypropylene is recycled into brooms, auto battery cases, bins, pallets, signal lights, ice scrapers, and bicycle racks.

### Plastic #6 – PS (Polystyrene)

- Polystyrene is Styrofoam, which is notorious for being difficult to recycle, and thus, bad for the environment. This kind of plastic also poses a health risk, leaching potentially toxic chemicals, especially when heated. Most recycling programs won't accept it.
- Plastic #6 is found in compact disc cases, egg cartons, meat trays, and disposable plates and cups.
- It is recycled into egg cartons, vents, foam packing, and insulation.

### Plastic #7 – Other, Miscellaneous

- All of the plastic resins that don't fit into the other categories are placed in the number 7 category. It's a mix bag of plastics that includes polycarbonate, which contains the toxic bisphenol-A (BPA). These plastics should be avoided due to possibly containing hormone disruptors like BPA, which has been linked to infertility, hyperactivity, reproductive problems, and other health issues.
- Plastic #7 is found in sunglasses, iPod cases, computer cases, nylon, 3- and 5-gallon water bottles, and bullet-proof materials.
- It is recycled into plastic lumber and other custom-made products.

See more at: <http://naturalsociety.com/recycling-symbols-numbers-plastic-bottles-meaning/#sthash.9c2q917O.dpuf>







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