

LINKS TO:

Stage 2, Module 13

Learning Object 3: Calculate your ecological footprint

Exercise 1

1.1 Use your own household as a model to fill in the table on Anna's behalf.

Sample answers:

<i>Macam sampah</i>	<i>Contoh?</i>	<i>Jumlah?</i>	<i>Dibuang ke mana?</i>
<i>Sampah organik bersih</i>	sayur-sayuran yang tidak dimakan	setengah piring	memberi makan ayam
	kulit dari berbagai sayuran dan buah-buahan daun-daunan	sekilo	dimasukkan ke tempat kompos
<i>Sampah yang tidak bisa didaur ulang, organik maupun bukan organik</i>	wadah margarin baki yang terbuat dari styrofoam	1	tempat sampah biasa, akan diambil dan dibawa sebagai bahan meratakan tanah
	bungkus plastik bekas pakai	2	
	tulang ayam	3 helai sisa tulang dari 1 ayam	
<i>Air kotor/air buangan</i>	air bekas mencuci pakaian	60 liter	dipakai untuk menyiram kebun
	air bekas mencuci piring	30 liter	air memasuki pipa riol menuju instalasi pengolahan air limbah
	air bekas mandi dengan pancuran	160 liter (untuk 4 orang)	
	air kotor manusia	78 liter (untuk 4 orang)	
		Jumlah: 328 liter	

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Limbah beracun	aki bekas	sebuah	ditinggal di bengkel
	telepon genggam	sebuah	diberikan ke Kantor Pos untuk dikirim ke pusat daur ulang telepon genggam lama
Sampah yang bisa didaur ulang	botol plastik botol gelas kertas koran kemasan	sekilo	dimasukkan ke dalam tempat sampah khusus bahan daur ulang
	stoples		dipakai lagi untuk menyimpan makanan

1.2 Based on your knowledge of Indonesian households, fill in the following rubbish diary for the Sugianto household.

Macam sampah	Contoh?	Jumlah?	Dibuang ke mana?
Sampah organik bersih	kulit dari berbagai sayuran dan buah-buahan	sekilo	tempat sampah di depan rumah lalu dibakar
	sisia makanan		
Sampah yang tidak bisa didaur ulang, organik maupun bukan organik	wadah margarin	1	tempat sampah biasa, akan diambil dan dibawa sebagai bahan meratakan tanah
	baki yang terbuat dari styrofoam	2	
	bungkus plastik bekas pakai	3 helai	
	tulang ayam	sisia tulang dari 1 ayam	

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Air kotor/air buangan	air bekas mencuci pakaian	40 liter	masuk saluran selokan
	air bekas mencuci piring	10 liter	
	air bekas mandi	48 liter (untuk 4 orang)	masuk ke dalam tangki septik.
	air kotor manusia	36 liter (untuk 4 orang) Jumlah: 134 liter	
Limbah beracun	ban mobil bekas	empat buah	titip ke bengkel untuk divulkanisir kembali
Sampah yang bisa didaur ulang	botol plastik botol gelas kertas koran kemasan	sekilo	dipisahkan untuk diambil pemulung
	stoples		dipakai lagi untuk menyimpan makanan

1.3 Use the following 'screens' to design a presentation, with some speaker notes in dot-point form for Anna and Ardi to use when they give their talk.

1.3.1 Screen one: Sampah organik yang bersih.

Keluarga Smart (Brisbane Australia)		Dibuang ke mana?	Catatan:
sayur-sayuran yang tidak dimakan	setengah piring	memberi makan ayam	Di kota-kota di Australia pengumpulan sampah adalah tanggungjawab Dewan Kota. Setiap rumah tangga biasanya disediakan dengan dua gerobak sampah — satu untuk sampah daur ulang dan satu untuk sampah yang tidak bisa didaur ulang. Gerobak sampah ini dikosongkan oleh truk sampah yang datang dari rumah ke rumah biasanya sekali seminggu.
kulit dari berbagai sayuran dan buah-buahan	sekilo	dimasukkan ke tempat kompos	
daun-daunan			

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1.3.3 Screen three: Air kotor/air buangan.

Keluarga Smart (Brisbane Australia)		Dibuang ke mana?	Catatan:
air bekas mencuci pakaian	60 liter	dipakai untuk menyiram kebun	Di kota-kota di Australia, sebagian besar rumah terhubung dengan sistem penyaluran kotoran dan pengolahan air. Yang tidak terhubung dengan sistem penyaluran kotoran, menggunakan fasilitas tangki septik atau teknologi baru seperti Biolytix yang mengolah air limbah secara alami.
air bekas mencuci piring	30 liter	air masuk pipa riol menuju instalasi pengolahan air limbah	
air bekas mandi dengan pancuran	160 liter (untuk 4 orang)		
air kotoran manusia	78 liter (untuk 4 orang)		
Jumlah: 328 liter			

Keluarga Sugianto (Jakarta Indonesia)		Dibuang ke mana?	Catatan:
air bekas mencuci pakaian	40 liter	masuk saluran selokan	Di kota-kota di Indonesia sebagian besar rumah bergantung pada tangki septik untuk mengumpulkan air kotoran manusia. Ada sebagian dari air ini yang mengalir langsung ke saluran selokan atau ke sungai-sungai. Di ibukota Jakarta, misalnya, hanya 3 persen dari air kotoran manusia ini yang mengalir ke instalasi pengolahan air melalui pipa dan sistem penyaluran kotoran.
air bekas mencuci piring	10 liter	masuk ke dalam tangki septik	
air bekas mandi	48 liter (untuk 4 orang)		
air kotoran manusia	36 liter (untuk 4 orang)		
Jumlah: 134 liter			

1.3.4 Screen four: Limbah beracun.

Keluarga Smart (Brisbane Australia)		Dibuang ke mana?	Catatan:
aki bekas	sebuah	ditinggal di bengkel	Di Australia dilarang secara hukum membuang limbah beracun sembarangan jadi ada kesadaran di masyarakat luas bahwa limbah beracun harus dibawa ke tempat-tempat tertentu.
telepon genggam bekas	sebuah	dikirim ke pusat daur ulang telepon genggam lama	

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Keluarga Sugianto (Jakarta Indonesia)	Dibuang ke mana?	Catatan:
ban mobil bekas empat buah	ditinggal di bengkel untuk divulkanisir kembali	Di Indonesia masyarakat masih kurang sadar akan kebersihan lingkungan jadi limbah beracun yang tidak bernilai biasanya dibuang sembarangan di mana saja. Industri besar di Indonesia masih membuang limbah industrial mereka langsung ke sungai-sungai karena jauh lebih murah daripada mengolahnya.

1.3.5 Screen five: Sampah yang bisa didaur ulang.

Keluarga Smart (Brisbane Australia)	Dibuang ke mana?	Catatan:
botol plastik sekilo botol gelas kertas koran kemasan	dimasukkan ke dalam tempat sampah khusus bahan daur ulang	Semua kota di Australia di mana ada pelayanan pengambilan sampah menyediakan satu gerobak sampah berwarna kuning khusus untuk memisahkan sampah yang bisa didaur ulang. Biasanya gerobak sampah kuning diambil truk pengambilan sampah sekali dalam dua minggu
stoples	dipakai lagi untuk menyimpan makanan	

Keluarga Sugianto (Jakarta Indonesia)	Dibuang ke mana?	Catatan:
botol plastik sekilo botol gelas kertas koran kemasan	dipisahkan untuk diambil pemulung	Pada umumnya rumah tangga di Indonesia tidak berusaha untuk memisahkan sampah yang bisa didaur ulang. Sampah ini dibuang bersama sampah organik untuk nantinya dipisahkan oleh para pemulung yang datang untuk mengambil bahan-bahan yang bisa didaur ulang
stoples	dipakai lagi untuk menyimpan makanan	

1.3.6 Screen six: Cultural factors influencing Australian attitudes to household rubbish and recycling.

Australian attitudes to household rubbish and recycling have been influenced by:

- government initiatives and waste disposal information campaigns, particularly by local or municipal governments
- most Australians, particularly in urban areas, being accustomed to a weekly kerbside collection of household waste
- recycling initiatives, which have been encouraged by local government waste-collection services providing separate bins for recyclable and non-recyclable waste
- local government providing annual, or biannual, kerbside collection of large recyclables, such as old furniture
- local government waste dumps offering a drop-off service, where residents can bring any other waste or large items, which are not collected through a scheduled kerbside collection.

1.3.7 Screen seven: Cultural factors influencing Indonesian attitudes to household rubbish and recycling.

Indonesian attitudes to household rubbish and recycling have been shaped by:

- the necessity for self-disposal of household waste in poorer areas where waste collection services are not available.
- Where there is a collection service available there are inconsistent levels of service caused, usually, by access issues. Consequently, waste is often collected manually. Any waste collected by manual rather than mechanical means ends up at community waste drop-off points where it is incinerated.
- the fact that in most large Indonesian cities house-to-house collection of recyclables is undertaken by informal waste collectors or *pemulung*. The municipal waste collection services concentrates on the collection and disposal of waste: sorting and separation is not regarded as the responsibility of the municipal service.
- a reliance on the *pemulung* to reduce and recycle a great deal of household waste.
- the lack of municipal waste collection services in the poorer *kampung* or urban slum areas, which has resulted in any waste not collected by *pemulung* being burnt or dumped into canals and rivers.
- the fact that if it wasn't for the army of *pemulung*, cities like Jakarta would have no effective means of collecting recyclables and these would just end up in landfills.

1.3.8 Screen eight: What similarities and differences are there in the way the two countries deal with their household rubbish?

Australian practices

- weekly house-to-house municipal collection of waste
- separation of waste into recyclable and non-recyclable bins
- further separation at point of disposal
- user-pays drop-off service at municipal tips for larger items such as whitegoods
- annual or biannual kerbside collection of larger items
- high level of public awareness and compliance with recycling
- consumer goods are invariably discarded for 'newer' technology or because the cost of repair is uneconomical.

Indonesian practices

- sorting and separation of recyclables is not a municipal responsibility
- any house-to-house collection service is paid for privately as a community initiative
- collection of recyclables relies on *pemulung*, even at the point of final disposal in municipal dumps
- low level of public concern and much public apathy towards environmental issues
- many consumer goods are recycled for reuse as the cost of repair is far less than the cost of replacement.

Similar practices

There is a large-scale collection of recyclable materials in both Indonesia and Australia. However, in Australia it is a formal municipal collection, whereas, in Indonesia, recyclables are primarily collected by private collectors who sell the recycled material to companies for their livelihood.

Exercise 2

2.1 What do these objects suggest about the local culture in Mesolithic period?

The large mound of mollusc shells suggests that Mesolithic humans from this particular area were coastal dwellers whose diets included a large proportion of sea molluscs. Because there is no evidence of cooking implements or fires nearby, it is probably that the sea molluscs were eaten raw. Because Bukit Kerang is in a tropical region surrounded by rainforests, people probably supplemented their diet with tropical fruits and vegetables, although this has not been verified by archaeological evidence or remains at the site.

2.2 What do you think the types of rubbish in the midden suggest about waste management practices in this part of Sumatra during the Mesolithic period?

Bukit Kerang consists entirely of mollusc shells and some crude stone tools. This suggests that the site was used for eating shellfish a large amount of shellfish over a long period of time because the mound of shells was continually being added to. This could have been out of convenience, because the site was a designate 'rubbish tip' area, or perhaps because the site was a place where large groups of people gathered to share food. Perhaps the mollusc mound had some cultural or spiritual significance for the people of the time.

2.3 Do you think these historical waste management practices were more or less sustainable than contemporary practices? Give reasons for your answer.

The practice of disposing of the mollusc shells in a single mound, whether it was done for ceremonial purposes or out of convenience, was obviously a sustainable activity considering the small population and the bountiful supply of sea molluscs. This would not be feasible in my home town, where a single 'pile' of food waste would soon become very large and very smelly, and might create significant health hazards.

Nevertheless, organic disposal of some household waste is something most people can probably do to reduce the amount of landfill. For example, burying or composting fruit and vegetable matter in the garden is probably feasible, and sustainable, for many Australians.