



SMOGBUSTERS way to school



Activities Manual for Students

Smogbusters aim to work with the community to improve urban air quality and help Australia meet its greenhouse gas objectives, by increasing community understanding of and willingness to adopt better practices with respect to public transport and motor vehicle use.

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Cycling

PROMOTION FUND

www.cycling-australia.com

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Contents

Core Activities	4
How much car pollution is produced?	8
Society and environment activities	9
Health and physical education activities	10-11
English activities	12
Science and technology activities	14
Arts activities	15
Maths activities	16-17
Cross word puzzle	18
Word search	22
Smogbusters board game instructions	23



Core Activities

Initial week

Survey individuals and the class for modes of travel to school for a week/day.

Analyse results and plan Smogbusters Week/Day.

- How many kilometres were travelled by car/walking/cycling/bus/train?
- What percentages of the whole are they?
- How much pollution went into the atmosphere from these ways of travelling?
- Graph individual results
- Total the class results and graph

Decide what improvement you would be looking for in the Smogbuster Way To School period?

- Would it be a 10% reduction in car travel or more?
- Discuss different ways of travelling to and from school.

Smogbusters Day/Week

During this week/day, travel to school by using less polluting means of travel.

Record modes of travel again by repeating the survey (see above).

Evaluate and promote your success.

- By how many kilometres did you reduce the vehicle kilometres travelled?
- How much pollution did this represent? (see conversion table overleaf)
- Organise a way of congratulations the students, parents and teachers involved.

Congratulations on a job well done!





SMOGBUSTERS way to school

WEEKLY SURVEY SHEET

for individual students

Record the modes of travel over one school week including both morning and afternoon trips by using the pictures supplied.

Students name:

Kilometres from home to school:

Initial survey

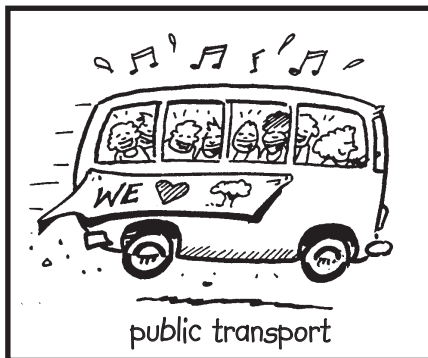
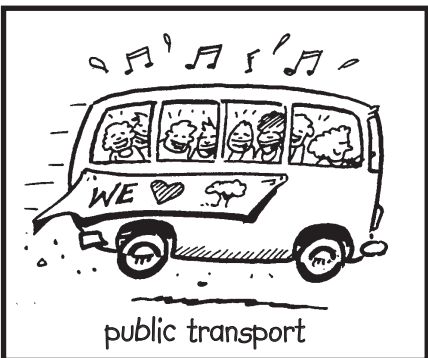
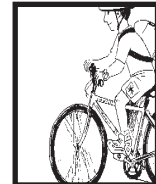
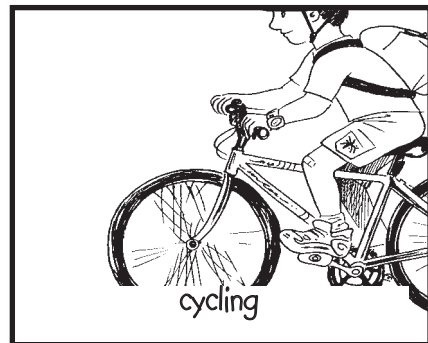
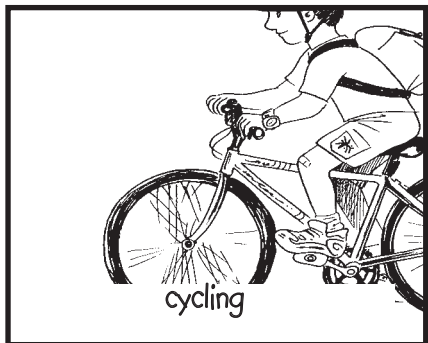
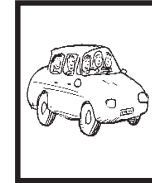
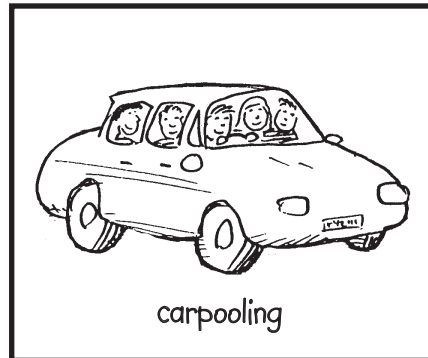
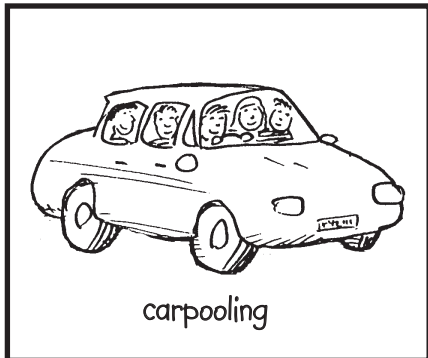
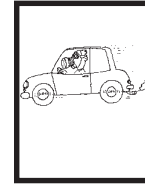
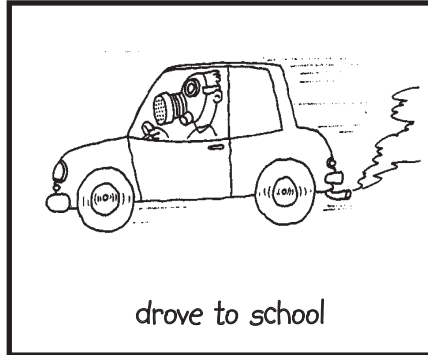
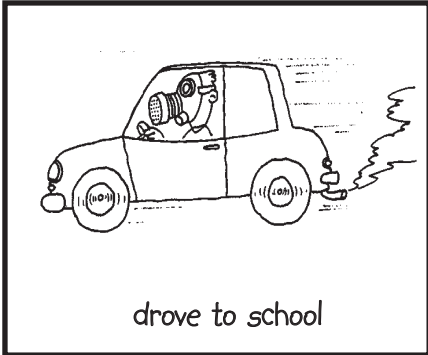
Smogbusters week survey



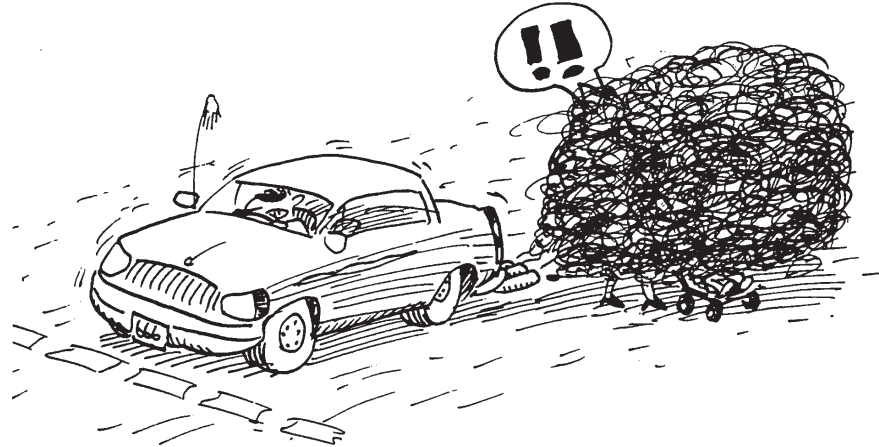
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	Morning	Afternoon
M O N D A Y		
T U E S D A Y		
W E D N E S D A Y		
T H U R S D A Y		
F R I D A Y		

Tally Pictures For Survey Sheets



How much car pollution is produced?



An average small car, with an engine size of 1.6 litres produces about 200 grams (0.2 kilograms) of carbon dioxide (CO₂) per kilometre.

All cars must meet the same emission standard for air pollution

For a 1997/98 vintage car this is

Hydrocarbons	0.26 grams per kilometre
Carbon monoxide	2.1 grams per kilometre
Oxides of nitrogen	0.63 grams per kilometre

For a 1986 to 1997 vintage car - (most cars on the road today)

Hydrocarbons	0.93 grams per kilometre
Carbon monoxide	9.3 grams per kilometre
Oxides of nitrogen	1.93 grams per kilometre

Therefore a 4 kilometre ride in an average small car would produce the following emissions:

Carbon dioxide (CO ₂)	0.8 kilograms
Hydrocarbons	3.72 grams
Carbon monoxide	37.0 grams
Oxides of nitrogen	7.72 grams

This is a conservative estimate but will give you the least amount of pollution produced from the cars being driven.

Can you find out the amount of pollution from other types of cars, and cars with different sizes of engines?



Society & Environment Activities



Interview 5 people about their views about public transport.

- What did you learn?
- Did they have any suggestions for improving public transport?
- Write to your local member (State & Federal) to let them know about the results of your interviews.

It has been said that the cost of pollution to society is high.

- Investigate ways in which pollution and transport impact on society.
- How can we reduce these costs?

Why do vehicle manufacturers and advertisers use native animals to advertise cars?

- Why do they only show one car on the roads when advertising cars instead of cars stuck in the traffic?
- Is road rage really increasing? What is road rage and how would you suggest we combat this problem?

Have a Smogbuster debate!

Possible topics include:

- It is more fun to walk to school than be driven?
- It is more comfortable to walk than drive?
- People should take responsibility for the pollution from motor vehicles.
- There should be compulsory emission testing for cars every year.

The school may wish to develop a school **GREEN TRANSPORT PLAN...**

- Ask a Smogbuster Project Officer what is involved in this.
- It would make a very good class project.

Health and Physical Education Activities

Cycle to school with a friend.



- Write down as many rules that you can think of that are important when cycling to school.

Walk to school with a friend.

- Write down as many rules that you can think of that are important when walking to school
- Design an interesting excursion to a sport centre.
- Work out how to get there using only walking, cycling or public transport.

Take a walk around your school...



What changes would you make to the urban environment that would make it easier for you to walk or ride to school?

- Would you change the route of the road?
- Would you add a bus stop outside the school?
- Would you have more bicycle racks in the yard?
- What else would you suggest?

Design a public transport, walking and cycling rally visiting as many places as possible in the school day.

- Use it as a fundraiser for the school.
- You will need lots of bus/train/tram timetables and don't forget to arrange to be somewhere suitable for lunch.

Health and Physical Education Activities continued

Identify aspects of your school environment that encourages the use of
(a) cars (b) bicycles (c) walking.

- What do you notice?
- Is there a way the we can increase the use of cycles and walking and reduce the use of cars?

Interview people in the school and wider community about their knowledge of pollution and transport.

- As a class, work out a list of suitable interview questions to ask.
- What did you discover from your survey?

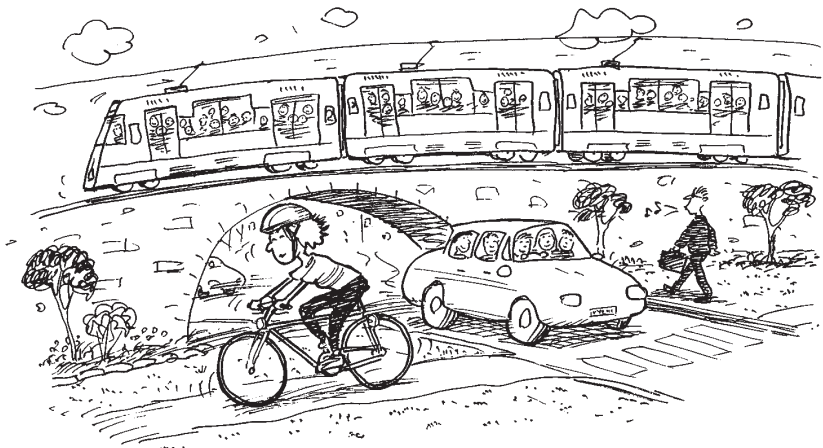
In Australia, if we continue to produce greenhouse gases at the current rate, what will be the impact on our lifestyle and environment in the future?

Organise bicycle safety lessons through the appropriate body in your State.

Invite a cyclist to speak to the class and tell of his/her experiences and reasons for cycling.

- Do they use the cycle as a method of transport or as a recreational activity?

List the benefits of cycling and walking over those of driving in a car.



English Activities

Imagine yourself on the back seat of a car.

- Describe what you see and hear in a day of driving?
- Are they happy scenes, tiring, sad?

Complete the Air Pollution word search found in this booklet.

Complete the crossword Puzzle found in the booklet.

Play the "Smogclouds and Sunbeams" board game (instructions at end of this manual).

Write a Smogbusters play with the message:

"It's healthier to walk, cycle and use public transport than drive a car."

Write a play where the characters are the pollutants from the car.

- What would they have to say, perhaps to a reporter interviewing them?
- What would the solution to combating these pollutants be from a Smogbuster?

Complete this statement. "I caught the bus to the city and....."

Have a Smogbuster poetry competition in the class or throughout the school.

- Choose some of these poems to put into the school newsletter.

Describe a day in the life of someone who lived before the invention of the motor car.

Start a journal relating to air quality and transport.

- Include newspaper or magazine articles, letters to the editor, brochures and pamphlets relating to this subject and anything that is of interest.

English Activities continued

Write a book about a trip taken using public transport, walking or cycling.

Make it a real trip so that people could read the book while actually taking the journey.

- This will take some research beforehand.
- It could be an ongoing class room project.
- It would be great to illustrate the book with class drawings or even use actual photographs.
- It could be a school excursion that could be documented.
- It could also be published for parents and friends, and used as a fundraiser for the class (school).

Have a school or class poster competition.

- What are the important features of a poster?
- What message do you need to convey?
- Use a theme - eg Public Transport, Good For You, Good for the Environment.

Describe how roads have changed our society.

Create a newspaper - "The Smogbuster Times"

or

"The Smogbuster Bulletin".

- Include articles about: transport and pollution, transport and health,

Convey your ideas in interesting ways.

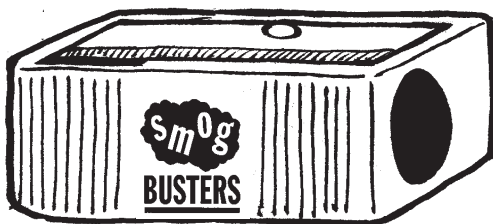
Posters with a message,

Cartoons,

Drawings,

Poems,

Parent articles etc.




Science & Technology Activities



What pollution comes from a car?

- Investigate and also list what effects these pollutants have on humans.
- Invite the Smogbuster Project Officer to speak with the class / school.
- Discuss in the class, the effectiveness of technology to solve the problems of air quality and vehicle emissions.
ie new vehicles are being developed that have reduced emissions. Will they solve all of our problems with regard to air quality.



What are the benefits of solar and electrical energy with regard to transport?

- Prepare a talk about why it is important to reduce car usage. Present it to the class.
 - Is this what you would say to your local politician? Why?
 - How would you change your talk for that audience?



What do you know about air monitoring, air quality, the relationship between transport and air quality?

- Research and prepare a project over 4 weeks
- Surf the world wide web for sites of interest.
Suggestion: Use key words such as air quality, transport, LUTRAQ, air pollution, as initial word searches.



Can you find out the amount of pollution from other types of cars, and cars with different sizes of engines?

Arts Activities

Class Activities

Write a Smogbusters song.

- Use happy music that you know. eg Jingle Bells is a lively, happy tune.

Develop a Smogbuster display.

- Put this in your school library, your local shopping mall or local library.

Create a mural design for a bus shelter close to the school.

- Ask the local council if they will supply paint for you to create the mural on the bus shelter.
- Remember to ask permission of all the authorities involved before painting.

Design an EcoCity where people live near to work and facilities therefore do not need cars.

- Build a model and put it on display. This could be a class or individual activity.

Paint or design a transport collage using magazine articles and pictures.

Make a Smogbuster Transport Mobile and hang it in places where people visit.

Design some Smogbuster Flags and fly them all on Smogbusters Way to School Day.

Student Activities

Draw a Smogbusters cartoon.

Design a poster with a Smogbuster Theme. eg Get on the street and use your feet.

Design and make badges displaying slogans about walking, cycling and using public transport.

- Use these as a fundraiser for the school on the Smogbusters Way to School Day/Week.

Design a Smogbusters Kite and hopefully fly it in clean air.

- Invite a guest, skilled in kite making to help with this activity.
- Hold a Smogbuster Picnic Day and have kite flying activities.

Remember to use public transport,
walk or ride a bicycle to the picnic!

Maths Activities

Survey the way the people in your class come to school on any one day.

- Graph the results.
- What do you notice about the results?

Survey cars passing a certain point on a road for a certain time eg one hour.

- Tally how many people were in each car.
- Graph the results.
- What do you notice about the results?
- How does this relate to air pollution?

Decide on a Smogbuster message to send to your friends or parents.

- Put it into code.
- Can your friends or parents crack the code?
- Include this message, in code, in your Smogbuster newspaper or school newsletter.

Find a map covering the way you come to school. (Use a street directory)

- Copy the map and draw the way you come to school.
- How far do you travel to school?
- Is there a different way for you to get to school?
- Can you get to school by cycling or walking?

Homework or project exercise:

- How much does it cost to run a car for (a) a year? (b) a week?
- Include all insurances, registrations, purchase costs*, petrol**, tyres, servicing and anything else that is relevant.
- Ask your parents for information about your cars at home.
 - * Work out approximately how many years you are likely to keep the car and divide the cost of the car by that figure to get the yearly cost.
 - ** Petrol - approximate how many kilometres the car is used in a week and use the cost of fuel to work out costs.

Maths Activities continued...

Use the travel diary in the National Smogbuster Information Kit (you can find it on the web) to survey a week of travel for your family.

- If an average small car (1.6litre engine) produces about 200gm (0.2 Kilos) of CO₂ per kilometre, how much carbon dioxide did your family car emit this week?
- Can you suggest any changes to travel patterns that would lessen the use of the car by the family? (ie less vehicle kilometres travelled).

Investigate the quickest way to use public transport to get to town.

- How much would a ticket cost for (a) you (b) your parents (c) brothers and sisters?
- How much would it cost for the whole family to get to town and home again?
- If it costs 48.1 cents per kilometre to travel in the car, which is the cheaper way of travelling to town? Don't forget to add in the cost of parking and any other expenses that are part of the expense of driving to town.

Car sales are increasing yearly.

- Get a map of the school and surrounding streets. Measure the length of different sorts of cars. Randomly, using the measurements of many different cars, decide how many cars will fit onto the roads in and around the school.

When roads are full, they are considered to be gridlocked.

- How many cars (approximately) would it take to gridlock your school roads?
- How many parents drive their children to your school? If they all arrive at once will they all fit?
- Can you suggest ways of getting to school that will lessen the congestion on school roads in the morning and the afternoons?



Crossword Puzzle

1	2		3			4		5		6	
		7	8						9	10	
11					12			13			14
							15			16	
	17			18						19	
20						21	22		23		
	24	25		26			27			28	
	29		30								
						31				32	
	33				34			35	36		
37					38			39			40
		41			42			43			



Crossword Puzzle - Across

1. It -- healthy to walk.
3. You can be part of the ----- solution.
7. When the air is clean it's ---ulous.
9. Smogbusters always work for clean ---.
11. Get ----- and ride your bicycle.
13. Say -- to using your car everyday.
15. You can - ---- be if you don't use your car.
17. When you -----, you are using a SMOGBUSTER Way to Get to School.
19. Keep Sunny Australia's air clean (initials - underlined)
20. When you walk -- school, you are being a good Smogbuster.
21. When you ride in a car with a friend to school you are part of a car -----.
24. It is Not Good to have smoky cars on the roads (initials - underlined)
26. Smogbusters work to improve urban -ir -uality.
27. This means living in a city or a town.
29. It is ---- to use public transport instead of your car.
32. If everyone left their car at home at least once a week, then -ir -uality would improve.
33. Congratulations for taking part in the -----'S WAY TO SCHOOL.
37. -- feels good to breathe clean air.
38. Urban Ecology (initials - underlined)
39. Always Recycle (initials - underlined)
41. Always -- a SMOGBUSTER.
42. Good air quality means Sustainable Living (initials - underlined)
43. This is a SMOGBUSTER Way to get around.



Crossword Puzzle - Down

2. Walking is ---- for the environment.
3. Use ----- transport whenever possible.
4. Don't be ---- and always drive you car.
5. A sustainable ----- system involves much less use of cars and much more use of public transport, cycling and walking.
6. Global Warming (initials - underlined)
8. Always be Air quality conscious (initials - underlined)
10. Be independent and often walk to school. (initials - underlined)
11. Walking -- me is fun.
12. Smog causes a yellowish --- over the city.
14. Be a SMOGBUSTER and catch a-----.
16. -- the amount of traffic on our roads increases the quality of the air we breathe decreases.
17. -----ed traffic leads to inefficient burning of fuel and hence higher pollution emissions per kilometre from motor vehicles.
18. Use ---- free petrol in your car.
22. For the ride of y-- r life, catch public transport.
23. I love bicycles (initials - underlined)
25. -- to school on your own two feet.
28. If you must drive , - --- Keep it well maintained and serviced.30. This layer acts as a filter for ultraviolet (UV) radiation from the sun.
31. Remember speed kills good ----- consumption
34. A --- carries up to 40+ people and only has one exhaust pipe.
35. -- is used to surface roads which take up space that could be used for other purposes
36. We are now entering the new SMOGBUSTER ----. .
40. Reduce the kilometres you trav-- in your car and reduce air pollution.

Crossword Puzzle Answers

I	S		P	O	L	L	U	T	I	O	N
	A		U			A		R		W	
	F	A	B			Z		A	I	R	
H	E	A	L	T	H	Y		N	O		T
E			I		U		A	S	T	A	R
	C	Y	C	L	E			P		S	A
T	O			E		P	O	O	L		I
	N	G		A	Q		U	R	B	A	N
	G	O	O	D				T		C	
	E		Z			F				A	Q
	S	M	O	G	B	U	S	T	E	R	
I	T		N		U	E		A	R		E
		B	E		S	L		R	A	I	L





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Word Search

There are 15 words that are often used in connection with air pollution used in the word search below. Can you find them?

I X I H A V L C F H N F X B O J D D V L
 K U S Y T U A F B O G P L G K U A Q K C
 Q C O P K K H A I M I P R S B P H F W Y
 T F G O P C I T C E L Z F S I C K Q D I
 H T Q W X Y Y N G Q K X M L T R P I U N
 J X V H V Q R N M V W L U A Q K O H S T
 U I S O N Q P Q R Y X S H S M O G S T O
 Z M F R E S H M C O P O L L U T I O N X
 M X B W R V G D O Y P R G S J Z N J I Y
 Q X Z J I E B U S H M P L L V F J T W G
 E J Q U S T N E O A E B C U W X P R B E
 Z F Y T V W E U S C M I V N K G D U H N
 H F G Q M B I A T L S M J G L T T C X Y
 T F R T W O C I G O O A B S U Q I K C P
 L V S N B C L Y U U E R V T B S I R A X
 W O X Y C K E R C D E Z E N J S E K R X
 H S O X Z I E Y E S P M Z F D Z Q R Z I
 P N C L G W D N T X N S N D L E Z D X J
 B O L R B I Z A F L A F U M F N O S E Q
 M W M A B R E A T H E J S W M C A I R F

Here are the words to look for:

AIR	BREATHE	BUS	CAR	CLOUDS
DUST	EYES	FRESH	LUNGS	NOSE
OXYGEN	POLLUTION	SICK	SMOG	TRUCK

Smogbusters 'Sunbeam and Smogclouds' Board Game Instructions

You will need: 1) The board, 2) 1 die and shaker, 3) SMOGBUSTER tokens
- a different colour for each player (3 or 4 if there are more people playing)

To play the game

1. Each player must throw the die and the person who throws the highest number goes first.
2. Each player has only one throw of the die each turn.
3. The first player throws the die and puts their SMOGBUSTER token on the square with that number.
4. If you land on a:
 - SMOGBUSTER LOGO then move 2 squares forward.
 - SUN then follow the SUNBEAM upwards since you have been a really good Smogbuster.
 - SMOG CLOUD then slide downwards, as this is not a good SMOGBUSTER activity.
5. The second, third and fourth player then has a turn and follows the same rules.
6. Follow the same order of play until one player has landed on the 100 square and wins.
7. To win, a player must throw the exact number to land on the 100 square.

HAVE FUN - PLAY AGAIN!

REMEMBER: Use public transport, cycle or walk whenever possible!
That's the SMOGBUSTER WAY TO GO!

SMOGBUSTER TOKENS

Photocopy this page, color each token a different color, cut out and paste onto cardboard.

