AH-CHOO!

A Case Study on Climate Change and Allergies

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Scenario

You work for ScienceSpeak, a public relations firm that educates the public about scientific issues. Your company has won a contract with the World Health Organization (WHO) to supply materials for their new multimedia public health campaign about climate change. The WHO is specifically interested in the relationship between climate change and the increasing prevalence of allergies and asthma worldwide.

Your boss calls a meeting to discuss the contract. She gives you a set of **Data Tables** prepared for you by two expert scientists that summarize recent evidence on the effects of increasing carbon dioxide and temperature on allergenic plants. Your job is to design and produce a communication product such as a brochure, poster, web page, or television program that informs the public about potential links between climate change and allergies.

Procedure

Note: The meeting descriptions below are intended as guides only. Be prepared to spend time on this project outside of class and to have additional meetings, if necessary.

Meeting 1: Evaluate Data

1. Examine the data prepared by your company's experts. Write a summary statement (one to two sentences) to describe the main trend for each table in the **Planning Worksheet**. Remember that the public is interested in the big picture.
2. Choose your target audience. For example, are you trying to reach children or adults? People who live in the city or in the country?
3. Use the Planning Worksheet to rank your summary statements in order of importance (1 = most important, 6 = least important). For each data table, consider the following:
    a. The strength of the scientific evidence—e.g.: How were the data collected? Are there sufficient data to support a strong claim? How consistent is a response across plant species? Across geographical areas?
    b. The relevance of the data to your target audience—e.g.: Where does your audience live? What plant species might they encounter? What sort of professional or recreational activities are your audience members engaged in?
4. Explain why you ranked the top two statements the way you did.
5. On the back of the Planning Worksheet, brainstorm possible messages for your communication product.

Meeting 2: Generate Strategies

1. Use the results of your brainstorming session at the end of Meeting 1 to decide what your main message will be. Remember, a respected international organization will be using your product to inform the public about an important issue. Make sure your message is clear, factual, scientifically accurate, and catchy.
2. Decide how you will communicate your message to your target audience. You may choose a product from this list:
   - Brochure
   - Poster
   - Web page
   - Television program (you may provide the script or a video)

   (Get your instructor's approval if you have another idea.)
3. Assess your knowledge by answering these questions:
   a. What do we know?
   b. What do we need to know?
   c. How can we find out what we need to know?
4. Before your next meeting, you will have to collect the information you need to complement the data provided by the experts. Decide what tasks need to be completed before the next meeting. Make sure everyone gets an equal amount of work.

Meeting 3: Produce Draft of Product

1. Review what each team member has learned since Meeting 2.
2. Outline your product. At a minimum, your product will need to include the following:
   a. An introduction that catches the reader's/viewer's interest and gets your message across.
   b. A summary of your top-ranked data that includes at least two graphics. Even within a given table, not all the information is equally important. You will need to emphasize the critical points. You should include at least one graph, but you also may use maps, flowcharts, diagrams, or other graphics.
   c. A summary of your less important data.
   d. A conclusion that reinforces your message and ties loose ends together.
3. Produce a draft of your product, based on the outline you made in Step 2. You will have time to revise your draft later.

Meeting 4: Peer Review and Revisions

Scientists (and many other professionals) use a process to improve their work called peer review. Before a scientific document can be published, it must be approved by a panel of fellow scientists. The procedure you are about to follow incorporates elements of a scientific peer review:

1. Your team will present its work to another team to be evaluated. Give one copy of the **Peer Review Form** to each person on the other team. Make sure your group name and intended audience are filled in on the form you give to the other team.

2. Another team will be presenting its work to you. Each member of your team will provide an individual review of the product by:
   a. providing positive feedback on what worked well in the product,
   b. suggesting changes that will help the product, and pointing out any errors or overlooked/misinterpreted data, and
   c. thoroughly evaluating the product according to the Peer Review Form. Reviewers should be strict but fair in their assignment of points to each category.

Meeting 5: Revision of Product

1. Incorporate the peer-review suggestions you think would improve your communication product. One member of your team should keep a record of each suggestion you actually use. Effective implementation of appropriate suggestions will mean a higher score for your product.
2. Make final adjustments to your product.

Meeting 6: Presentation of Final Product

1. Give the Peer Review Forms from Meeting 4 back to the respective reviewers.
2. Present your product to the class. When the team you evaluated in Meeting 4 presents its product, repeat the peer review process.
3. Submit the Planning Worksheet, Peer Review Forms, and your final product to your instructor.

Resources

Allergen/Additive/Preservative Search
http://allallergy.net/allergensearch.cfm

American Academy of Allergy Asthma & Immunology
http://www.aaaai.org/

American College of Allergy, Asthma & Immunology
http://www.acaai.org/

Asthma and Allergy Foundation of America
http://aafa.org/

National Institute of Allergy and Infectious Diseases
http://www3.niaid.nih.gov/

Phenology and Human Health: Allergic Disorders
http://www.euro.who.int/InformationSources/MtgSums/2003/20030508_1

Pollen.com
http://www.pollen.com

World Pollen Calendar
http://www.hon.ch/Library/Theme/Allergy/Glossary/calendar.html

Data Tables

Table 1. Observational Data. Change in start of pollen season in Europe from 1969-2003. "—" = No data.

	Average change in start of pollen season			
Country	***Oak***	***Birch***	***Ragweed***	***Grass***
Austria	—	17 days earlier	—	—
Belgium	—	23 days earlier	—	—
Denmark	—	13 days earlier	—	—
France	12 days earlier	6 days earlier	No change	No change
Italy	8 days earlier	—	—	6 days earlier
The Netherlands	18 days earlier	10 days earlier	—	6 days earlier
Switzerland	21 days earlier	20 days earlier	20 days earlier	14 days earlier
United Kingdom	19 days earlier	—	—	—

Sources: Corden and Millington, 1999; Emberlin et al., 2002; Frenguelli, 2002; Rasmussen, 2002; Van Vliet et al., 2002; Clot, 2003; Thibaudon et al., 2005.

Table 2: Observational Data. Duration of pollen season (17 pollen types) in Europe (450 stations), 1974-2002.

Flowering Season*	***Average Change in Duration of Pollen Season***
Winter	8 days shorter
Early spring	3 days longer
Mid-spring	3 days longer
Late spring	4 days longer
Summer	2 days longer
Autumn	4 days longer
* Trees typically flower from winter to mid-spring. Grasses can flower all year in some areas, but usually peak from late spring to summer. Most allergenic herbs flower from summer to autumn.	

Source: Jaeger, 2001 (cited in World Health Organization, 2003).

Table 3: Observational Data. Change in amount of airborne pollen in Europe, 1969–2003. "—" = No data.

	Average change in amount of pollen		
Country	***Oak***	***Birch***	***Grass***
Austria	—	4.5 × more	2.4 × more
Belgium	2.7 × more	2.3 × more	No change
Denmark	—	4.1 × more	—
France	2.3 × more	5.3 × more	—
Germany	No change	No change	No change
The Netherlands	4.7 × more	2.4 × more	No change
Switzerland	2.6 × more	2.4 × more	1.1 × more
United Kingdom	4.8 × more	4.7 × more	No change

Sources: Frei and Leuschner, 2000; Rasmussen, 2002; Spieksma et al., 2003; Bortenschlager and Bortenschlager, 2005; Thibaudon et al., 2005.

Table 4: Experimental Data. Effect of increased carbon dioxide (CO_2) and temperature on pollen production in common ragweed. Half of the ragweed plants in each experiment were treated either with the predicted amount of CO_2 that will be in the atmosphere in 50 years, or the predicted temperature that will occur in 50 years.

Location	*Growing Technique*	*Treatment*	*Observed Change in Pollen Production in Treated Plants*
Maryland, USA	Environmental chambers	High CO_2	1.9 × more pollen than control plants
Illinois, USA	Greenhouses	High CO_2	1.6 × more pollen than control plants
Oklahoma, USA	Outdoor field	High temperature	1.8 × more pollen than control plants

Sources: Ziska and Caulfield, 2000; Wan et al., 2002; Wayne et al., 2002.

Table 5: Experimental Data. Effect of carbon dioxide on concentration of protein allergens in ragweed pollen. Plants were grown in environmental chambers.

Concentration of CO_2 (µmol/mol)	*Concentration of Allergen From Ragweed Plants (ELISA/mg pollen)*
280 (pre-industrial levels)	93
370 (current levels)	103
600 (projected future levels)	178

Source: Singer et al., 2005.

Table 6: Observational Data. Effect of temperature on concentration of protein allergens in birch pollen. Plants were grown in outdoor gardens in northern Finland.

Location	*Concentration of Allergen From Birch Trees (% Antibody Bound to Protein)*
Hill, 270 m above sea level.	103
River valley, 90 m above sea level. (Daily mean temperatures 1.0–2.5°C warmer than Hill location).	130

Source: Ahlholm et al., 1998.

Planning Worksheet—Meeting 1

Data set	*Summary statement*	*Rank (1 = most important)*	*Reason for ranking of top two statements*
Table 1			*1.*
Table 2			
Table 3			
Table 4			*2.*
Table 5			
Table 6			

Peer Review Form

Reviewer name:				
Group name:		Intended audience:		
Type of presentation (circle one): Brochure Poster Web page Television program Other:				
Criteria	**Points**	**Peer Review (Draft)**	**Peer Review (Final Product)**	**Instructor (Final Product)**
Introduction				
1. The main message is clear, factual, scientifically accurate, and catchy.				
Body				
2. The product summarizes all six data tables.				
3. Appropriate types of figures (e.g., graphs, maps, etc.) are used to highlight the most important data. The figures are detailed and creative.				
Conclusions				
4. Appropriate conclusions are made based on the available data.				
General Criteria				
5. The text/spoken word is easy to read/hear.				
6. The product is organized logically.				
7. The format and language are appropriate to the target audience.				
8. The product is an appropriate length.				
9. There are no errors in spelling and/or grammar.				
TOTAL				
List three specific things you liked about the draft communication product: 1. 2. 3.				
List three specific suggestions for improving the draft communication product: 1. 2. 3.				
General comments:				