Policy Context: Cardiovascular Effects Research

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September 28, 2004

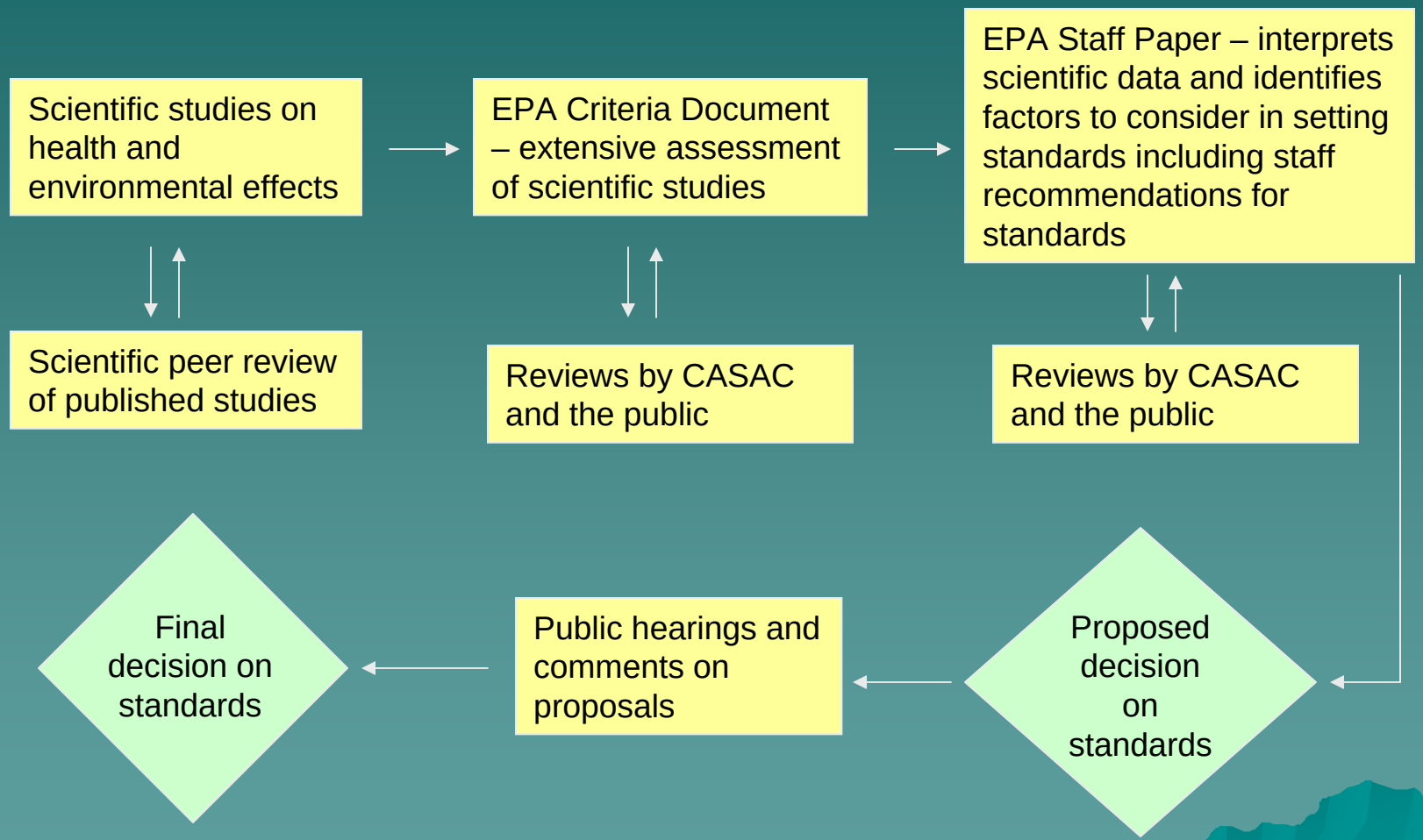
How do we use health research findings?

- Health-based air quality standards
- Communication of health risks
- Estimating benefits of regulations or policies

National Ambient Air Quality Standards

- Clean Air Act requires establishment of primary National Ambient Air Quality Standards (NAAQS) that "are requisite to protect the public health"
  - need to protect sensitive subgroups
- Different considerations apply to setting NAAQS than to achieving them
  - Setting NAAQS: health and environmental effects
  - Achieving NAAQS: account for cost, technical feasibility, time needed to attain

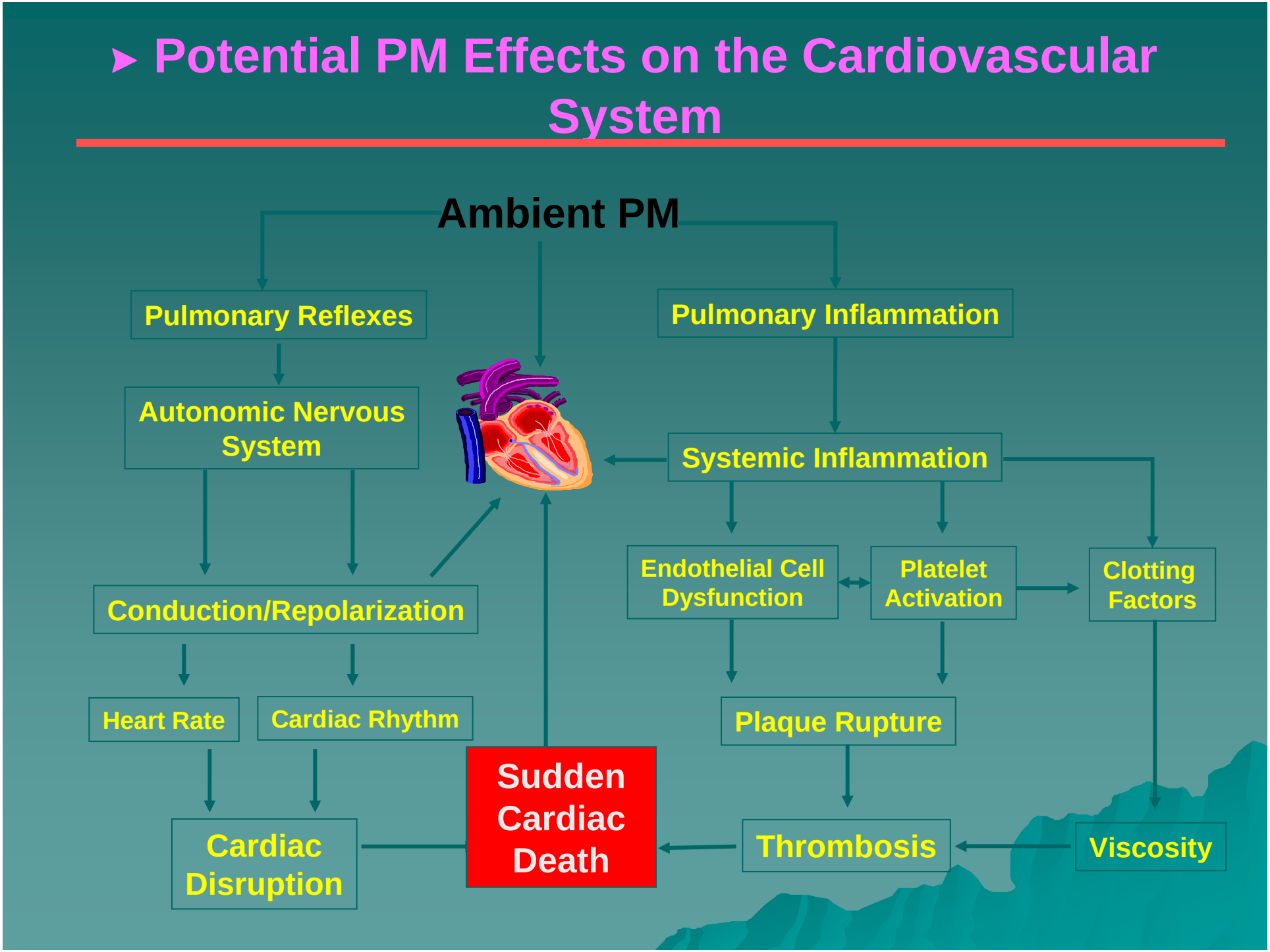
Review Process for NAAQS



1997 PM NAAQS Revisions

- Health basis primarily epidemiological study results
- Uncertainties remained – mechanisms, biological plausibility one key research question

▸ Potential PM Effects on the Cardiovascular System



How can new health evidence influence regulations or policies?

- Air quality standards
  - Indicator (e.g., $PM_{2.5}$)
  - Averaging time (e.g., 24-hour, annual)
- Implementation strategies
  - Focus on sources

Communication and Outreach

- Air quality index (AQI), publications
  - www.epa.gov/airnow
- Some key questions:
  - What are effects of concern?
    - At what ambient concentrations?
  - Who is susceptible to air pollution?
  - What signs or symptoms would a person look for?
  - What can a person do to reduce risk?

Air Quality Index for $PM_{2.5}$

Descriptors Values	$PM_{2.5}$ ($\mu g/m^3$)	Cautionary Statements
Good 0 – 50	0 – 15	None
Moderate 51 – 100	16 – 40	Unusually sensitive people should consider reducing prolonged or heavy exertion.
Unhealthy for Sensitive Groups 101 – 150	41 – 65	People with heart or lung disease, the elderly and children should reduce prolonged or heavy exertion.
Unhealthy 151 – 200	66 – 150	People with heart or lung disease, the elderly and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.
Very Unhealthy 201 – 300	151 – 250	People with heart or lung disease, the elderly and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.

Particle Pollution and Your Health

Particle levels can be elevated indoors, especially when outdoor particle levels are high. Certain filters and room air cleaners can help reduce indoor particle levels. You also can reduce particle levels indoors by not smoking inside, and by reducing your use of other particle sources such as candles, wood-burning stoves, and fireplaces.

How can the Air Quality Index help?

In many areas, local media provide air quality forecasts telling you when particle levels are expected to be unhealthy. Forecasts use the same format as EPA's Air Quality Index, or AQI, a tool that state and local agencies use to issue public reports of actual levels of particles, ground-level ozone, and other common air pollutants.

Using the AQI's color-coded scale, these forecasts help you quickly learn when air pollution is expected to reach unhealthy levels in your area. In the newspaper forecast below, for example, the black arrow points to the "orange" range, indicating that particle levels are expected to be unhealthy for sensitive groups. On television, you might hear a meteorologist say something like this: *"Tomorrow will be a code orange air quality day, with particle pollution at levels that are unhealthy for sensitive groups. If you have heart or lung disease, or if you're an older adult or a child, you should plan strenuous activities for a time when air quality is better."*

AIR QUALITY INDEX FOR PARTICLE POLLUTION

Air Quality Index	Air Quality	Health Advisory
0 to 50	Good	None.
51 to 100	Moderate	Unusually sensitive people should consider reducing prolonged or heavy exertion.
101 to 150	Unhealthy for Sensitive Groups	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.
151 to 200	Unhealthy	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.
201 to 300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.

Daily air quality and health information are available on the AIRNOW Web site.

AIRNOW

AIRNOW (*www.epa.gov/airnow*) is a Web site that gives daily information about air quality, including ground-level ozone and particles, and how they may affect you. AIRNOW contains:

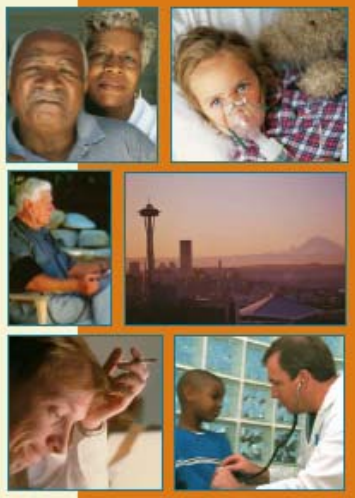
- Real-time particle levels for many locations.
- Air quality forecasts for many cities across the country.
- Kids' Web page and associated teacher curriculum.
- Smoke Web page.
- Links to state and local air quality programs.
- Ideas about what you can do to reduce particles. For example, you can keep your car, boat, and other engines well-tuned, and avoid using engines that smoke. You can also participate in local energy conservation programs.

**Photo courtesy of The Weather Channel.*

Office of Air and Radiation
www.epa.gov/air
September 2003
EPA-452/F-03-001

EPA United States Environmental Protection Agency

Particle Pollution and Your Health



What Is Particle Pollution?

Are You at Risk?

How Can You Protect Yourself?

Smoke Brochure

If you have asthma or other lung disease, make sure you follow your doctor's directions about taking your medicines and following your asthma management plan. Call your doctor if your symptoms worsen.

If you have heart or lung disease, if you are an older adult, or if you have children, talk with your doctor about whether and when you should leave the area. When smoke is heavy for a prolonged period of time, fine particles can build up indoors even though you may not be able to see them.

Air cleaners can help indoors – but buy before a fire.

Some room air cleaners can help reduce particle levels indoors, as long as they are the right type and size for your home. If you choose to buy an air cleaner, don't wait until there's a fire – make that decision beforehand. Note: Don't use an air cleaner that generates ozone. That just puts more pollution in your home.

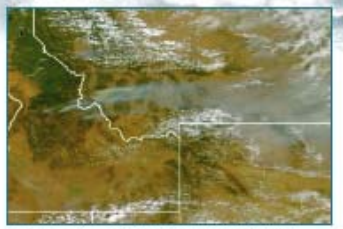
For more information about home air cleaners, go to: *www.epa.gov/iaq/pubs/residair.html*

Dust masks aren't enough!

Paper "comfort" or "dust" masks – the kinds you commonly can buy at the hardware store – are designed to trap large particles, such as sawdust. These masks generally will not protect your lungs from the fine particles in smoke.

AIR QUALITY INDEX FOR PARTICLES

Air Quality Index	Air Quality	Protect Your Health
0 to 50	Good	None.
51 to 100	Moderate	Unusually sensitive people should consider reducing prolonged or heavy exertion.
101 to 150	Unhealthy for Sensitive Groups	People with heart or lung disease, older adults, and children should reduce prolonged or heavy exertion.
151 to 200	Unhealthy	People with heart or lung disease, older adults, and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.
201 to 300	Very Unhealthy	People with heart or lung disease, older adults, and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.
301 to 500	Hazardous	Everyone should avoid all physical activity outdoors; people with heart or lung disease, older adults, and children should remain indoors and keep activity levels low.



Smoke from a fire can travel rapidly, affecting air quality in areas hundreds of miles downwind.

If you have heart or lung disease, if you are an older adult, or if you have children, talk with your doctor about steps you should take to protect yourself if smoke affects your community. If you live in a fire-prone area, plan ahead! Talk with your doctor *before* fire season, so you'll know what to do in a smoky situation.

Only your doctor can advise you about your specific health situation. But EPA's **Air Quality Index** can help you protect yourself when particle levels are high. Check the table to the left for specific steps you can take.

For more information:

- **If there is an active fire in your area, follow your local news or fire web sites for up-to-date information.**
- **About smoke and health:** *http://www.epa.gov/airnow/smoke*
- **About wildfires, including current status:** *http://www.nifc.gov/*
- **About indoor air quality:** *http://www.epa.gov/iaq/ia-intro.html*

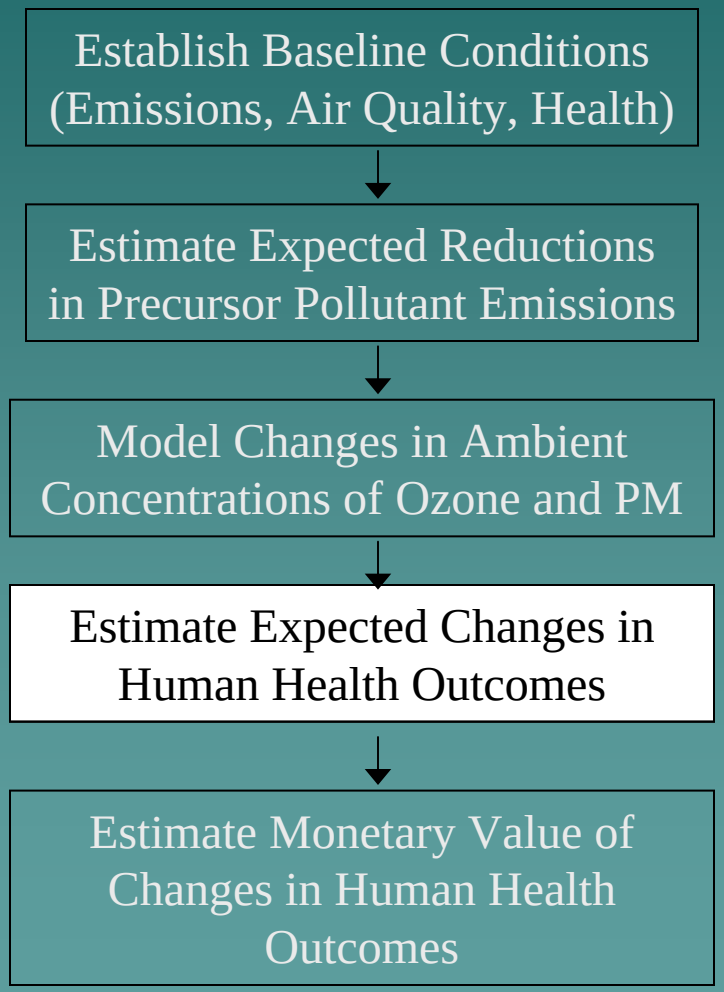
Top right cover photo (billowing smoke) courtesy of Hawai'i Fire Photo News.

Office of Air and Radiation
EPA-452/F-02-002
www.epa.gov/air
May 2003

EPA United States Environmental Protection Agency

How Smoke from Fires Can Affect Your Health

Health Benefits Assessment



What health effects do we quantify?

- Mortality (long-term exposure)
- Chronic bronchitis
- Hospital admissions
- ER visits for asthma
- Acute respiratory symptoms
- Asthma attacks
- Work loss days