

The background of the slide is a photograph of a traditional-style building with a blue roof and red walls. A large plume of white smoke or steam is rising from the building, partially obscuring it. The sky is overcast and grey.

# **RISK ASSESSMENT: POLLUTION AND AIR QUALITY**



**PRESERVATION OF BUDDHIST TREASURES RESOURCE** is the free online resource for monasteries and communities, with practical information on digital documentation, risk assessment and disaster recovery, safer storage, and preservation of thangka and other treasures. The resource comes from over 50 years of preservation work in monasteries.



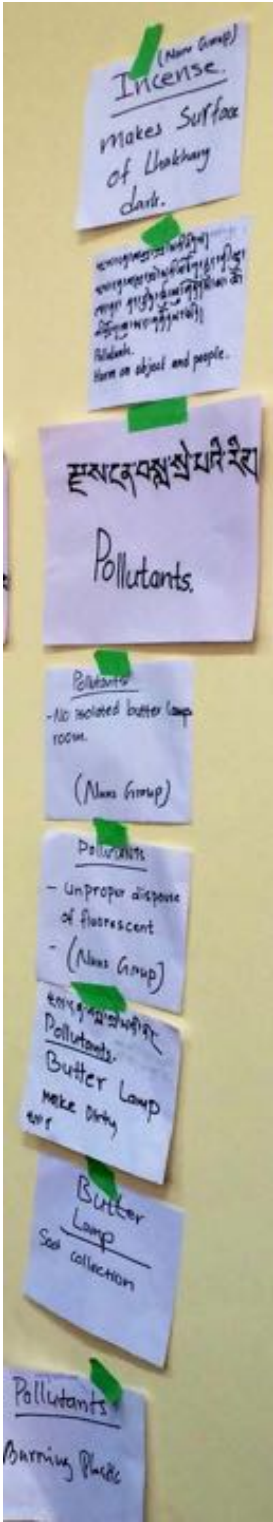
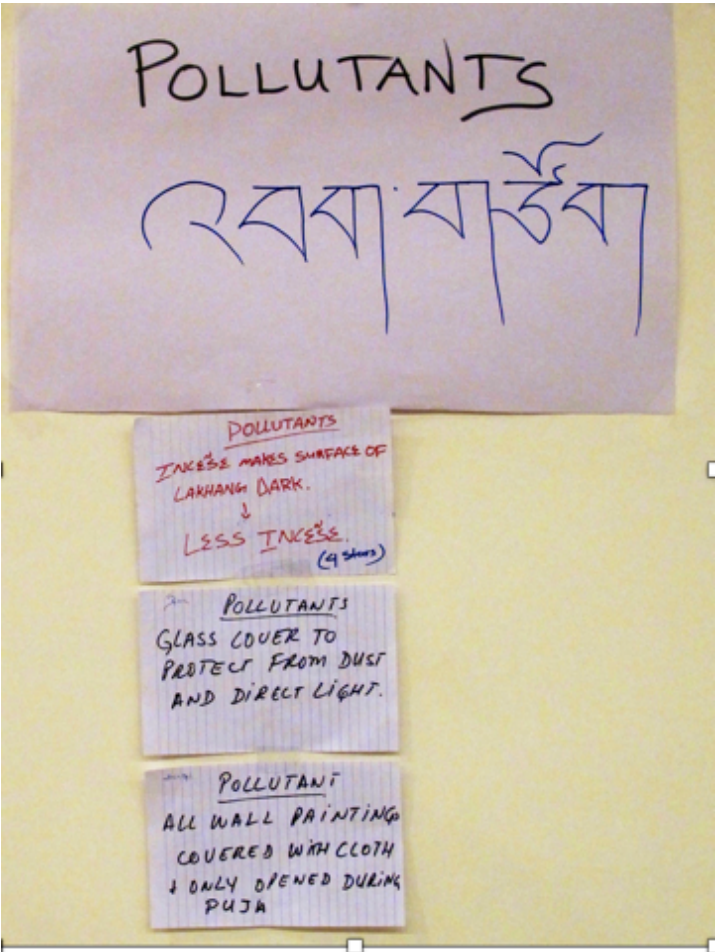
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## **RISK ASSESSMENT: POLLUTION**

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Links and Resources

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# Introduction



Monastery experiences with pollutants are described by participants during **Preservation of Monastery Treasures Workshops**

Stories about pollution from monks, nuns, and community members are translated into English:

- “Incense makes surface of Lhakhang dark”
- “Glass cover to protect from dust and direct light (will protect treasures from pollution)”
- “All wall paintings covered with cloth and only opened during puja”
- “Pollutants harm objects and people”
- “Need isolated butter lamp room”
- “Butter lamps make things dirty”
- “Butter lamps create soot”
- “Improper disposal of fluorescent lights”
- “Burning plastic (pollutes)”

### **Types of Pollution**

There are several types of pollution:

- Air Pollution
- Pollution from poor quality or incompatible storage or display materials
- Pollution caused within the treasure itself as it deteriorates from age or other factors

### **Examples of Pollution**

Even walking down the street, your health can suffer from pollution. The air may seem beautiful around scenic monasteries; however, when you are walking around the community, there may be terrible pollution and it is hard to breathe.



*This is an example of monastery air pollution where huge amounts of juniper are burning. At this time, monks said they were getting sick from the smoke. Burning juniper is a sacred tradition, but in this quantity, scientists would call it air pollution.*

When we think of air pollution, we imagine urban industrial pollution. However, even within your monastery, pollution can cause health problems, and also harm your monastery treasures.



*Not all air pollution is industrial, but we often imagine this when the topic is discussed*

Air pollution is easier to see and experience during certain seasons of the year, and during certain cultural heritage festivals, when you are walking around.

For example, this is air pollution in India during the Diwali festival in India, where there are many exploding fireworks that create not only air pollution, but also noise pollution that frightens animals and people who are sensitive.



*Air in Delhi during the annual Diwali festival*

A monk told the story that he was in Kathmandu during the Diwali Festival, and when he flew into Delhi, it was impossible for planes to land because of poor visibility at the airport. The pilots could not see the runway because the air was very thick with smoke pollution. For a while they had to divert flights. When the plane was finally able to safely land, it was impossible to see anything through the window. When the monk got to the hotel, the air looked like there was powder in it. It was difficult to breathe. This happens every year during Diwali. It's a long-standing tradition but one that causes air and noise pollution for people and animals. Diwali is an inspiring tradition in the culture of India, but at the same time it can cause illness and even death due to air pollution.

Here is an example of environmental conditions during a certain time of year when crop residue is burned in the areas surrounding Delhi, India. The air pollution measurement is "off the charts"!

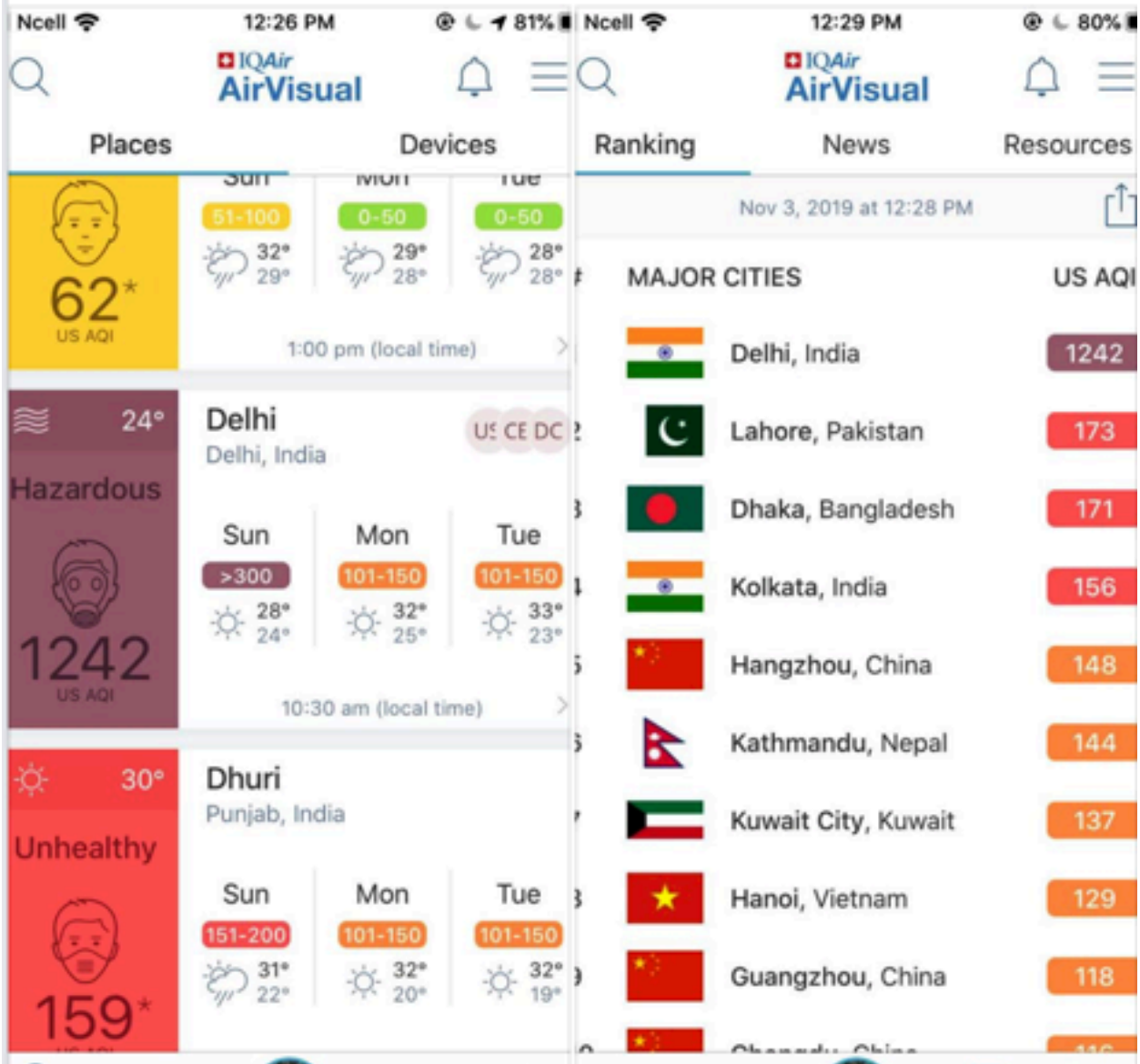


Environmental conditions can cause deterioration of monastery treasures. For example, sunlight can cause skin cancer and skin wrinkling! Even though oxygen is in the air we breathe, it interacts with what treasures are made from and can speed deterioration when, for example, the heat is high, and there are high levels of ultraviolet content in the air and bright light.



This was posted on social media:

I have this IQ AirVisual app on my phone that measures 2.5PM particles in the air. A reading of 301-500 is "Hazardous" and you rarely ever see that. How is it even possible that Delhi, India is registering 1,242 today!?



### **Other Forms of Pollution**

Pollutants take many forms, such as gas (e.g., sulfur-based gases), aerosols (e.g., animal dander or lint), solids, liquids, or particles. Pollutants can exist within a treasure (tanned leather and copper together), as part of what it is made from. Pollutants can be transferred from something close to the treasures (a fine silk stored in a wooden box). And pollutants can come through the air (salts and particles).

In your own monasteries there are pollutants from the smoke/incense offerings. Several nuns described that incense “makes the surface of their lhakhang dark.” In fact, some people get very sick from incense and butter-lamp smoke. These examples are often mentioned when the risk of pollution is discussed for monasteries.



*Traditional offerings of butter/oil lamps and incense*



*Traditional oil lamp*



*Traditional incense offerings*

### **Safer Storage and Handling**

There are other practices in monasteries and communities that can cause toxic pollution which are harmful to both our health and our treasures. One example is the use of mothballs for storage. The thymol and/or paradichlorobenzene is toxic to humans, pollutes the air in the storage trunk, storage room. The harmful fumes remain in the treasures and do not effectively deter pests. In addition to potentially causing liver damage to people, these substances can harm the very treasures they are meant to protect from pests, and yet they continue to be used.



*Mothballs are often placed in storage trunks for monastery treasures. These potentially carcinogenic substances can damage the treasures and harm treasure caretakers.*

Pollution even damages electronic media. This is an example of a CD that was damaged by air pollution. The electronic signal on it is totally gone as a direct result of air pollution.



*Pollution can permanently damage electronic media (Canadian Conservation Institute)*

To prevent damage from air pollution, create a microclimate around the most treasured things. In museums, monasteries, and libraries, protect precious treasures using boxes and placing items inside cases.

These are a few basic, practical, and low-cost suggestions:

- Use caution about placing raw wood against treasures as it can transfer acids in the wood and cause staining and deterioration
- Use clean hands while handling treasures as your body oil can transfer to the objects
- If there is surrounding air pollution, you can isolate certain chosen treasures by storing them in a mini-environment, for example, wrapped in well-washed cloth, or behind glass.
- Consistent inspection and monitoring of your treasures in use and in storage can alert you to deterioration that may be caused by surrounding pollution and other environmental conditions.



*Traditional texts are often protected with storage within a mini-environment*

The buffering quality of placing treasures within enclosures to protect them from changes in temperature and relative humidity, from monsoon, and from potential theft can also provide protection from environmental and localized pollution. It is important to use safe materials, those that do not “off-gas” deteriorating chemicals, for the enclosure in order to avoid creating a polluting environment within the microclimate of a storage box.

The effects of pollution build up over time and you may not notice the changes in your treasures, such as discolouration, until it is too late. That is why it is important to have good documentation of your monastery's treasures: please refer to the **Documentation** chapter in this resource.

What can you do about pollution? You can certainly make choices in your daily life. Some possibilities are to work with your community to decrease fireworks and traffic. Pay attention to your surrounding environmental conditions, for example, know when the air is going to be unbreathable for you and take steps to protect the most important things that are under your care.

## **Summary**

There are impressive international monastery initiatives working towards environmental responsibility. At this time, there are practical and low-cost steps you can take to help reduce threats and damage to the environment and safeguard your monastery and the surrounding community. Treasure Caretaker Training furthers this initiative with specific steps to recognize risks and to safeguard Buddhist lineage treasures at your monastery, your own, and the earth's health by reducing all types of pollution inside of your monastery, and to help protect Buddhist treasures at the local and international level.

Thank you to funders for ***Preservation of Buddhist Treasures Resource***, including The Pema Chodron Foundation, Khyentse Foundation, Shambhala Trust, Shelley & Donald Rubin Foundation, Anne Thomas Donaghy, Henry Ming Shen, and many more.





## Preservation of Buddhist Treasures

### RISK ASSESSMENT ཉེན་ཁ་དཔྱད་ཞིབ།

- ❖ **Pandemic** ཡོངས་ཁྱབ་རིམས་ནད།
- ❖ **Earthquake** ས་ཡོམ།
- ❖ **Fire** མེ།
- ❖ **Water** ལྷ།
- ❖ **Theft** ལྷན་མ།
- ❖ **Pests** གནོད་འབྲུ།
- ❖ **Temperature and Relative Humidity** རྫོང་ཚད་དང་ལྗོས་བཅས་ཀྱི་བཞུའ་ཚན།
- ❖ **Human Choices** མིའི་འདུམ་ག།
- ❖ **Pollution** འབགས་བཅོག།
- ❖ **Light** རློག་མེ།

### EMERGENCY PLANNING AND DISASTER MITIGATION མངུག་འཆར་གཞི་དང་ཉེན་བརྒྱུན་ལྗོས་ལྟོགས།

### SAFE STORAGE ཉེན་མེད་དོན་ལང།

### DOCUMENTATION ཡིག་ཆ་ཚོ་བཞོད།

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དགོན་པའི་གནམ་པོའི་གཤེས་སྤུང་གྱི་དབང་རྒྱུ་ལོགས་པ།

**Digital inventory** འགྲུལ་ཚུལ་ལོག་ནས་པོའི་མཐོང་འཕྲོད་པ།

**Risk assessment and disaster mitigation** རྒྱུ་ལ་རྫོན་འཕྲོག་དང་རྫོག་གཏོང་ལེན།

**Recording digital interviews with elders** མི་རྒན་རངས་དང་འགྲུལ་ཚུལ་ལོག་ནས་བཟུང་འདྲི་བྱ་བྱེད་པ།

**Scientific research** ཚན་རིག་ཉམས་ཞིབ།

**Current project** ད་རྒྱུ་ལས་འཚུལ།

**Free online preservation resource for communities and monasteries**

དགོན་པ་དང་སྤྱི་ཚོགས་ཀྱི་ཚེད་ཏུ་གནམ་པོའི་གཤེས་སྤུང་འཕུལ་ལས། མི་རྒན་རང་ལྟེན་ལོག་རིན་མེད་ཏུ་སྤུལ་བ།



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## Basic Elements of Emergency Plan for Monasteries and Communities

1. People First
2. Who Do You Call?
  - Who is in charge?
  - Emergency phone numbers
  - Full monastery residence list, to text, WeChat, WhatsApp, etc.
3. Who Should Salvage Collections?
  - Monastery Treasures Salvage Team (trained previously)
4. Where to Bring Damaged Treasures
  - Another monastery?
  - Your monastery dining room, classrooms, etc.
5. What Do You Salvage First?
  - Decide your priorities, preferably before an emergency
  - Refer to your documentation files
  - Mark the location of these priority treasures on floor plans
6. Where Are the Emergency Supplies?
  - Stockpile supplies before an emergency occurs
  - Mark the location of supplies on floor plans
  - Contact local vendors for additional supplies
7. Who Provides Security During an Emergency?
  - Monastics, community members, or government?
8. What Information Technology Will You Need to Replace?
  - Survey your hardware and software currently in use
  - Store monastery files in "cloud" or duplicated offsite
9. Do You Have Insurance?
10. Who Has the Plan?
  - Make a list of who has copies of your Emergency Plan
  - Update Emergency Plan and Team

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