

Peace Corps - Improved Stoves and Ovens

Welcome to the Peace Corps Clean Indoor Air/ Improved Cooking Toolkit, your one-stop source for reliable and relevant information about improved cookstoves, ovens and biogas applications appropriate for Volunteer communities. We welcome and encourage use of the toolkit by Peace Corps Volunteers and staff globally. We have designed this toolkit so we can share Peace Corps developed resources both globally and regionally. Furthermore, we have selected, and will continue to expand our selection of resources from partner agencies that we think are most appropriate for staff and Volunteers.

Indoor air pollution is responsible for nearly half of the more than 2 million deaths each year that are caused by acute respiratory infections (WHO, *Inheriting the World: the Atlas of Children's Health and the Environment*). By significantly increasing the efficiency of traditional biomass-burning (such as dung, wood and coal), by routing smoke away from cooking areas, and by reducing the need for biomass, alternative cookstoves reduce respiratory infections, reduce the impact of cooking on climate change, reduce deforestation, and reduce the time that women and children must spend gathering firewood.

- **biodigesters** (methane produced from organic waste), successfully promoted by Volunteers in Nicaragua and Thailand
- **high-efficiency wood burning stoves and ovens**: and note that the technology of these has advanced through research tremendously in the past six years
- **solar ovens**, most successfully promoted one of several cooking methods of a family
- **retained heat cookers**: a way to reduce cooking fuel by allowing the food to continue cooking with retained heat for a period of time in an insulated space.
- **indoor air pollution**: general information on current statistics and studies, and its impact on children.

Have a suggested resource or comment about this section? Please visit our feedback form.

What are K4Health Toolkits?

Purpose and Audiences of This Toolkit

Types of Resources in This Toolkit

How to Use This Toolkit

How can I make a comment or give feedback about this toolkit?

How can I suggest a resource to include in this toolkit?

Publishers of Resources Included in This Toolkit

What are K4Health Toolkits?

K4Health Toolkits are electronic collections of carefully selected information resources on a particular topic for health policy makers, program managers, and service providers. They are based on a continuous publishing principle that allows them to evolve after publication to capture additional resources and to identify and fill remaining information gaps.

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Types of Resources in This Toolkit

This toolkit was created to provide guidance and tools to update, develop or expand clean air and efficient cookstove projects. It contains:

- Tools and resources to help implement a variety of clean air-related activities
- A compilation of the most up-to-date knowledge and best practices on clean air

- Resources on the most up-to-date evidence from the World Health Organization and other international reproductive health organizations
- Case studies on clean air-related activities from several countries

How to Use This Toolkit

Expanding access to and use of clean air projects requires a holistic approach—including accurate information; up-to-date policies and guidelines; quality training, supervision, and services; effective communication and marketing; and proper logistics. This toolkit provides information on all these elements and contains tools and resources to help you implement a variety of clean air-related activities.

To browse the contents of this toolkit, use the navigation on the right to view resources related to clean air topics and programs. Each section includes a list of a number of high-quality resources selected by the Peace Corps Sector Health Specialists, further organized by source: Peace Corps or outside "technical" sources. Click on the title of the resource for more information about it, or click on the full-text link to get direct access to the full resource.

Some of the tools are readily available in an adaptable format (e.g., Microsoft PowerPoint presentations). We encourage you to alter and personalize these tools for your own use (please remember to credit the source). If you do use these tools or adapt them, we would love to hear from you.

How can I suggest a resource to include in this toolkit?

We invite you to contribute to evolving and enhancing this toolkit. If you have developed or use quality resources that you think should be included in the toolkit, please use the feedback form to suggest them. The toolkit collaborators will review and consider your suggestions.

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Publishers of Resources Included in This Toolkit

Save the Children

Measure - DHS

CARE

EngenderHealth

Academy for Educational Development/ HIV project
Helen Keller International
UNICEF
Pan American Health Organization (PAHO)
World Health Organization (WHO)
Population Service International
FHI 360
American Colleges of Nurses Midwives
John Hopkins University Center for Communications
Food and Agriculture Organization (FAO)
Inter-Agency Standing Committee (IASC)
World Vision
Interaction
Population Council
Institute of Reproductive Health
International HIV/AIDS Alliance
Core Group
EPA
Partnership for Clean Indoor Air
World Bank
COSI Foundation for Technical Cooperation
WEDC
Appropriate Infrastructure Development Group (AIDG)

Biodigesters



Below are resources written outside Peace Corps concerning biodigesters (methane produced from organic waste), successfully promoted by Volunteers in Nicaragua and Thailand (see Peace Corps materials).

Note that biodigesters work best in warm climates and with animal dung.

Have a suggested resource or comment about this section? Please visit our feedback form.

Resources:

- **Bio-gas Manual and Community Powerpoint**

The development community has had successful experiences with biogas in Asia. This manual from Thailand is a practical guide to building a low-cost biodigester that has proven to be successful for household cooking in Thailand.

- **Bio-gas Manual**

This manual provides a little more theoretical background than the Thailand manual and an alternative installation design.

- **Appropriate Infrastructure Development Group (AIDG)**

This is a website that generally describes the value of, pros and cons of biodigesters in developing countries.

Improved Efficiency Stoves



Note that the technology of wood-burning cookstoves and ovens has advanced through research tremendously in the past six years. Be sure to contact the experts and to ask whether the stove model you are selecting has been tested for fuel efficiency or conduct a test yourself using established standard test protocols (see M&E section).

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Resources:

- **Fuel-Efficient Stove Programs in Humanitarian Settings: An Implementer's Toolkit**

Don't be deceived by the focus of this document on humanitarian settings. This is an excellent document for anyone who is planning or implementing a program to promote fuel-efficient stoves in developing countries. In particular, pages 69 to 99 go over the basics of a variety of types of fuel-efficient stoves, their advantages and disadvantages, with a comparison table on pages 94-99.

- **Solid-Fuel Household Cook Stoves: Characterization of Performance and Emissions**

This article describes the testing and results of ten types of improved cookstoves. Results of both fuel efficiency and air emissions are compared.

- **Improved Cookstoves**

This guide, available in English and Spanish provides an overview of alternative cookstoves, and discusses rocket stoves, solar ovens, and retained heat cookers.

Trends in Consumption and Production: Household Energy Consumption

This document covers the major energy uses of households in various income ranges, demonstrating that for lower income ranges fuel for cooking is the primary energy need.

- ## Barrel Ovens

This guide, available in English and Spanish, and testimonial video, show the construction process and advantages of a high-efficiency wood-burning barrel oven, successfully promoted by Peace Corps Nicaragua.

- ## Design Principles for Wood Burning Cook Stoves

This document, available in English, Spanish and French and co-authored by one of the leading research organizations in cookstoves, describes the research and design of wood burning cookstoves, as well as a method for conducting a field water test.

- ## Youtube Video on the Ecocina

Indoor Air Pollution



The indoor smoke produced by cooking indoors and inhaled by those cooking and their children contributes to pneumonia and other respiratory infections ?the biggest killer of children under five years of age.

These resources give more information on the topic of indoor air pollution and its impact on children in particular.

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Resources:

- **Inheriting the World: the Atlas of Children's Health and the Environment**

This atlas covers the major environmental health threats to children worldwide, including indoor air pollution. The entire atlas as well as posters and maps can be downloaded from the WHO website.

Retained Heat Cookers



A retained heat cooker is an insulating unit that is designed to keep a pot hot and reduce cooking fuel by allowing the food to continue cooking after the pot is removed from the heating source.

Have a suggested resource or comment about this section? Please visit our feedback form.

Resources:

- **Guide to Designing Retained Heat Cookers**

This document describes the advantages, design and use of retained heat cookers.

Solar Ovens



Solar are most successfully promoted as one of

several cooking methods that a family uses. For example, solar ovens may be used for water pasteurization as well as cooking rice, stews and beans.

Have a suggested resource or comment about this section? Please visit our feedback form.

Resources:

- **Parabolic Solar Cookers for Making Tea and Ironing**

Napkins

Parabolic solar cookers work in freezing weather as long as the sun is shining. In this film you can watch me make a hot cup of tea between snowstorms. Parabolic solar cookers could be an important tool in your emergency preparedness kit for times when there is no electricity. There's another unique use for parabolic solar cookers that most people in the west will never need, but it could come in very handy and save a lot of money for the billions of people in the developing world who have no electricity--ever--and who do do their ironing with a hollow cast iron device filled with hot pieces of charcoal. It's smoky and expensive to keep that charcoal burning. In June I used my parabolic solar cooker to heat a charcoal iron and press my great grandmother's hundred year old linen napkins. More people need to know about this so I hope you will share this and other videos on my solarwindmama channel with your family and friends.

- ## PCIA Bulletin - Solar Cooking, January 2010 Issue 22

This bulletin outlines the history of solar cooking, the challenges of its adoption in developing countries, where to find recipes for solar cooking, and some success stories of application in developing countries.

M&E

Every volunteer and Peace Corps program promoting improved efficiency stoves and ovens should monitor:

1. Decreases in fuel usage; based on independent testing or Peace Corps staff using standard test protocol.
2. Health Impacts, to the extent possible
3. Continued use and proper maintenance of the improved stove, for a period of at least one year.
4. Any other benefits or issues with the improved stove.

The three standard test for improved stoves are:

The Water Boiling Test (WBT): This lab-based test is most appropriate for those manufacturing or adapting stove designs. It can be used to determine fuel efficiency, the time it takes to boil water, and emissions.

Controlled Cooking Test (CCT): This test involves local cooks preparing a local dish. Adding these variables limits comparability of results to a given setting but provides important feedback

as to the likely acceptability of a stove by local users.

Kitchen Performance Test (KPT): While this test has the most variables, it is the best test for determining the field-based results of stove use. It consists of a survey and a fuel consumption test with families using both the traditional and the improved cook stove. The test gives results of user satisfaction and per capita fuel consumption for a given stove.

Resources:

- **Webinar on Kitchen Performance Test**

This Webinar from the Partnership for Clean Indoor Air (PCIA) is a great introduction to stove testing basics, particularly the differences, costs, and benefits of:

- a. Water boiling test
- b. Kitchen performance test
- c. Field performance test

- **Kitchen Performance Test**

Kitchen Performance Test standards and protocols

- **The Water Boiling Test (WBT)**

Water Boiling Test standards and protocols

- **Evaluation of Improved Stove Programs in Guatemala: Final Report of Project Case Studies**

This report presents the results of a study conducted by Fundación Solar, a Guatemalan nongovernmental organization (NGO) that works in the field of renewable energy, on experiences from improved-stove programs in Guatemala. The goal of the study was to systematically evaluate selected projects to determine success factors, sound practices that could be replicated elsewhere, and weaknesses to avoid.

- **The Controlled Cooking Test (CCT)**

Controlled Cooking Test standards and protocols

- **Monitoring Stove Performance**

The Stove Performance Monitoring Module is laid out in three steps. First, participants are introduced to the criteria for evaluating stove performance and the various methods to determine performance. Secondly, the module looks at the principles behind the creation of a better stove.

Finally, participants get experience in undertaking a test as part of a practical exercise.

Source URL: <https://www.k4health.org/toolkits/improvedstoves>