

Education Tools for Urine Recycling

The [Rich Earth Institute](http://www.RichEarthInstitute.org) offers educational events and resources for learning about watershed health, sustainability, and ecological sanitation. Through the lens of “peecycling,” Rich Earth engages people in thinking about water conservation and watershed health, the nutrient cycle, food production, infrastructure, and community resilience.

Why urine?

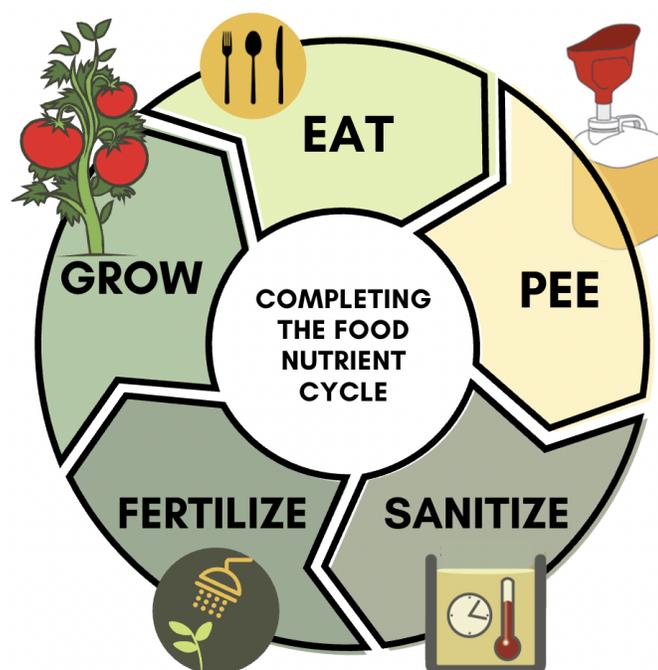
Human urine contains vital plant nutrients. When flushed, urine wastes precious potable water and can contribute to downstream nutrient pollution. But when urine is reclaimed as a fertilizer, it can be used to grow more food, thereby completing the local food nutrient cycle. Rich Earth operates a community-scale urine recycling program based in Brattleboro, VT which serves as its platform for research and education.

What does Rich Earth offer?

We take a collaborative approach to education. Rich Earth is eager to partner with diverse organizations (garden clubs, watershed groups, and schools) to develop an event that works best for you. All webinars can also be offered as in-person workshops or presentations for partners in the Brattleboro, VT area.

Contact

Please get in touch with Rich Earth’s education director Julia Cavicchi at julia@richearthinstitute.org to coordinate an event and discuss pricing.



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1 - Schools

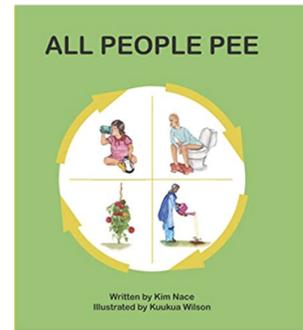
Class visits & virtual presentations

Intro to Peecycling

Rich Earth can give an introductory webinar that has been designed for school groups by using age-appropriate content to explain the process and benefits of nutrient recycling. The webinar follows the urine nutrient recycling process through collection, transport, treatment, and application on farmland as fertilizer. This webinar is roughly an hour long, including the presentation, a short [animation video](#), and time for student Q & A. You can view a sample recording from [Rich Earth's presentation](#) at the Vermont Youth Environmental Summit. Rich Earth can also share resources with the class about how Brattleboro-area students (and their families) can [get involved](#) with Rich Earth's community urine recycling program.

Early Childhood

Rich Earth can give a book reading of [All People Pee](#), written by Rich Earth co-founder, Kim Nace. This companion book to *Everyone Poops* is a great book for potty training, for kids curious about other animals, and for exploring the role of humans in the natural world. The book is targeted to 1-3 year olds.



Online Teaching Case

For advanced high school and college classes, Rich Earth can walk students through an [online teaching case](#) about urine-diverting toilets. This activity includes a role-playing activity and fishbowl discussion.

Themed Workshops

In addition to general introductory presentations, Rich Earth can also offer workshops that are tailored to cover specific topics, including:

Ecosystem Matter & Energy: Explore the effects of urine fertilizer on plants, soil, and water--experimenting with different amounts of urine and dilution levels, practicing careful plant observation, comparing how fertilized and unfertilized plants differ in yield, development, plant/insect interactions, disease etc. Rich Earth can provide small amounts of pasteurized urine to interested classrooms.

Chemistry: Learn about processes of ammonia volatilization and pH change. Students can explore how hydrolyzed urine is an example of a buffer system and the role of pH in enzyme inhibition.

Life cycle analysis: Students can explore the concept of life cycle analysis of systems, considering questions such as: How does using urine as a fertilizer compare to the use of similar synthetic fertilizers? How do different ecological sanitation systems compare to conventional wastewater treatment and septic systems? Rich Earth can introduce data about water consumption and greenhouse gas emissions to support this workshop.

Social research: Students can practice creating and implementing surveys and interviews. These can be used to explore attitudes towards the use of urine as a fertilizer. Questions could include: Would people eat different foods fertilized with urine? What words for communicating about urine fertilization do people prefer?



Climate Change: This webinar examines how our climate is affected by the fertilizer industry, conventional wastewater management systems, and modern agricultural practices. Students are encouraged to explore how urine recycling can help build local climate resilience through protecting water resources and supporting nutrient sovereignty.

Environmental storytelling: Students can create art, videos, short stories, etc. imagining a future world with ecological sanitation. How would that world look different? How would people think and feel about urine in our society?

Produce Tastings: During the fall harvest season, Rich Earth can bring vegetables grown in their demonstration garden to Brattleboro-area classes for produce tastings (with prior consent of parents/guardians). Students can learn about the local food nutrient cycle, food labeling and communications.



Introductory webinars (for school community)

Rich Earth can offer presentations for adults in the school community (including teachers, school staff, and student families) introducing the concept of urine nutrient recycling and addressing any questions/concerns that people may have prior to Rich Earth's engagement with students in the classroom. This webinar is offered free of charge.

Research Center Tours

Class groups visit the Rich Earth Institute for tours to see nutrient recycling in action. (Preview with a [virtual tour](#) of Rich Earth). Rich Earth will give a brief introductory presentation and then walk student groups through the technology and processes that support collection, transport, treatment, and application as fertilizer on farms. The tour features Rich Earth's laboratory, demonstration garden, urine transport truck, treatment technologies, and a "toilet museum" of urine-diverting and composting toilets.



2 - Gardens

Urine Fertilizer for Home Gardens Webinar

This webinar covers [why & how to fertilize your garden with urine](#). Reclaiming urine as a fertilizer is a safe and simple practice that gardeners everywhere can learn to access an abundance of free fertilizer – and prevent downstream pollution. This webinar covers Rich Earth’s agronomic and social research results and step-by-step instructions for using urine in home gardens. It introduces Rich Earth’s [Home Gardening Guide](#) (details below) and concludes with inviting participants to contribute to Rich Earth’s [Community Science Survey](#) (details below).

Urine fertilizer is safe to use in home gardens. The [World Health Organization](#) supports this practice if the urine comes from the same household that will be eating the produce and basic guidelines are followed.

Guide: Urine for Home Gardens

Rich Earth’s [step-by-step guide](#) explains how to safely and effectively fertilize with urine in the home garden. These are available digitally or as a print booklet.

Community Science Survey

This [community science survey](#) will contribute to the growing body of knowledge about where, how, and why people fertilize with urine in their home gardens around the world. While we know urine is used by many, we have little detailed information about specific practices. This survey gathers gardener experiences to help grow the understanding of how urine works for different crops, in varying conditions and will inform our educational efforts. Partners are invited to disseminate this survey with their networks.



Urine Fertilizer and Pharmaceuticals Webinar

What happens to the medicine in our urine? Is urine that contains pharmaceuticals safe to use as a fertilizer? We’ll share what Rich Earth has learned from six years of research in partnership with the University of Michigan to answer this question - and what new questions we still have.

Urine Fertilizer for Community Gardens Webinar

Rich Earth staff will introduce the possibility of using urine fertilizer to support nutrient cycling in community gardens as a strategy for building resilience. We will present information about some of the best practices for fertilization and how to sanitize urine for use on a community scale (through storage or pasteurization). We will then facilitate

discussion with community garden participants about whether and how to implement this practice, including considerations of communication with the broader community about the practice, various cultural perspectives on the issues, and questions and concerns of participants.

Urine Fertilizer for Farms Webinar

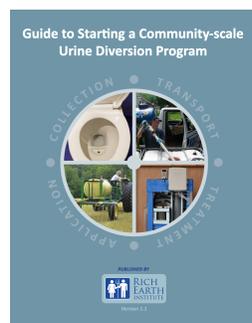
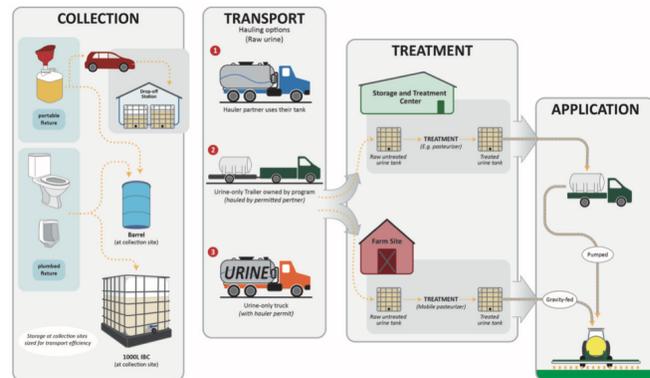
Rich Earth offers presentations for small-scale farmers about urine fertilization. We will share what we have learned from eight years of farm partnerships in Brattleboro, VT, including insights from agronomic and social research with farmers, as well as guidance and assistance with on-farm application, and/or opportunities to collaborate to develop tools for communication and education about urine fertilizer.

Rich Earth has opportunities for Brattleboro-area farmers to receive sample quantities of pasteurized urine from Rich Earth’s community collection program to trial in on-farm test plots.

3 - Communities

Community Scale Urine Nutrient Recycling Webinar

This webinar provides a guide (details below) to community organizing strategies for creating urine nutrient recycling programs. Rich Earth will share insights from their own journey to create a community program in Brattleboro, VT. This webinar includes a screening of a [short film](#) introducing Rich Earth and the reasoning behind urine nutrient reclamation. The webinar highlights the roles of different stakeholders, as well as technology needs, regulatory requirements, and changing perceptions related to overcoming the “ick” factor.



Guide: Community-scale Urine Recycling Program

This [guide](#) covers the process of starting up a community-scale program and key elements of its operation. These include technical details for processes and equipment, regulatory and economic considerations, and the human factors that come into play—including effective education and community outreach and building relationships with farmers.

Urine Reclamation For Our Climate Webinar

This webinar examines how our climate is affected by the fertilizer industry, conventional wastewater management systems, and modern agricultural practices. The webinar then focuses on how urine recycling can help build local climate resilience through protecting water resources and supporting nutrient sovereignty.

Progress in Urine Reclamation Research and Technology Webinar

This webinar introduces some of the key players and developments in technological, agro-ecological, and social research related to this field. The webinar presents an introduction to the cultural and historical contexts for reclaiming human waste as a resource and the current state of research into urine recycling.

4 - Additional Services

Consultation

Rich Earth can offer consultation services for individuals, businesses, and organizations interested in implementing urine nutrient recycling at different scales. Contact info@richearthinstitute.org with inquiries.

Become a Urine Donor

Rich Earth always invites new participants to join our flagship urine-recycling initiative in the greater Brattleboro, Vermont region. [Learn more about becoming a urine donor.](#)

Get a Urine Diverting Toilet

Rich Earth also installs permanent urine-diverting toilet or urinal collection systems in private and public buildings. To learn more and join our waiting list of interested sites, email info@richearthinstitute.org.

Portable Toilets

Rich Earth offers urine collecting & sawdust composting portable toilets in the greater Brattleboro, VT area. Contact toilets@richearthinstitute.org with inquiries.

COLLECT

Cubie & Funnel:
Plastic jug with odor-blocking funnel attachment, available in 5-gallon or 2.5-gallon sizes.
Suggested donation: \$35/unit, additional \$10 for extra jugs

Decorative cloth cozy: A privacy sleeve that fits over the jug.
Free

Nun's cap: Fits into your flush toilet so you can sit to pee. The "cap" has a spout making it easy to pour into storage container.
Free

P-style: Stand-to-pee device
Cost: \$12

URINE COLLECTING & SAWDUST COMPOSTING

PORTABLE TOILETS

RICH EARTH INSTITUTE