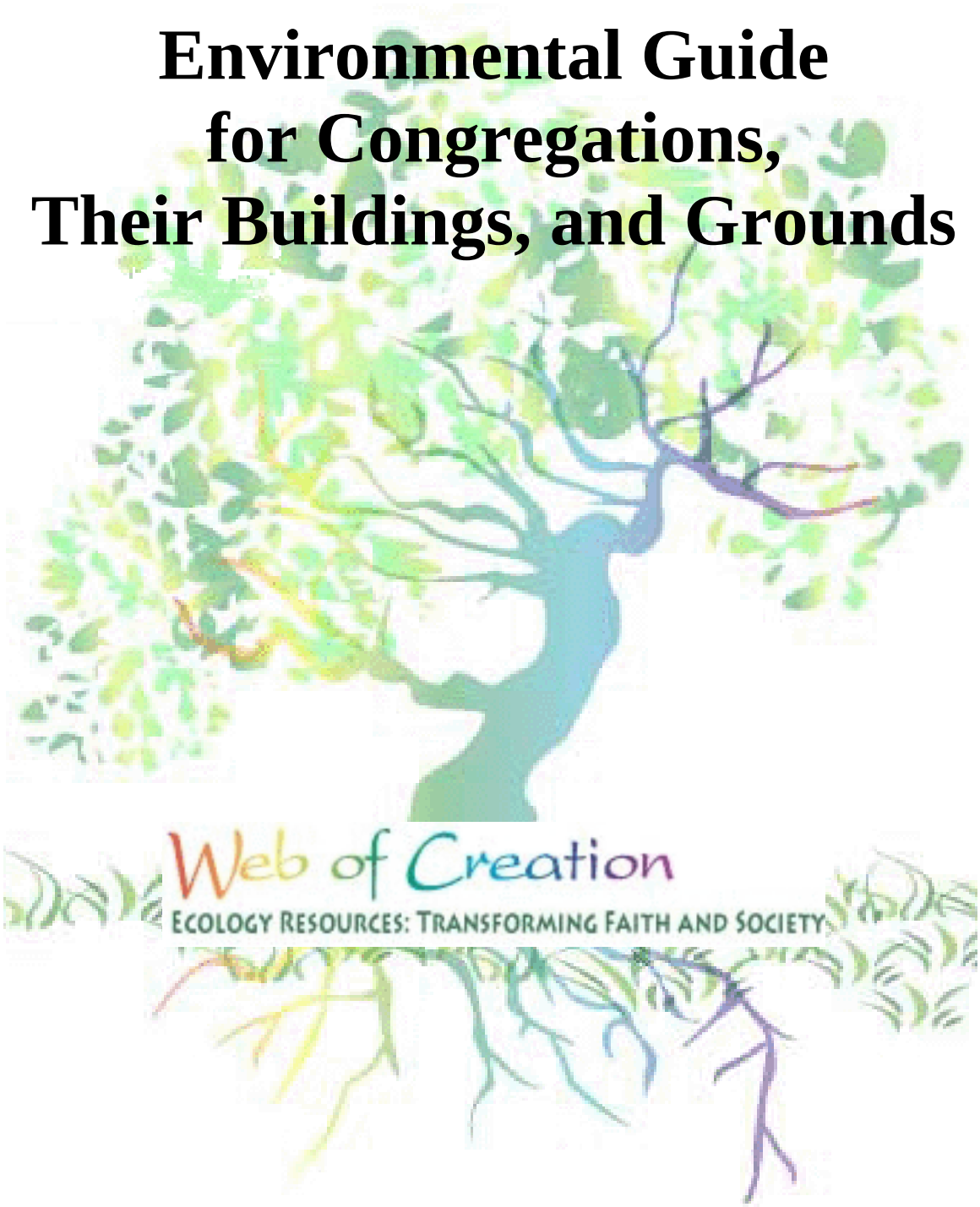
Environmental Guide for Congregations, Their Buildings, and Grounds



Web of Creation
ECOLOGY RESOURCES: TRANSFORMING FAITH AND SOCIETY

Environmental Guide for Congregations, Their Buildings and Grounds

David Glover and David Rhoads, editors

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Paul Bailie, Emily Carson, Jon Dumpys, Jonathan Halvorson, Juanita Krmaschek, Christie Manisto, Brooke Peterson, Margaret Schoewe, Gwen Sefrhans, Matthew Stebbens, Ronald Strobel, Joy Sutbers, Gretchen Voss

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Introduction

Welcome to an adventure in action. What the world needs from Christians and our congregations is action on behalf of creation. We can be transformed through worship and education. We can embrace the biblical and theological mandates to care for the Earth. But unless we are walking the walk and not just talking the talk, our beliefs and commitments mean little in terms of changes that will make a difference.

This guide is directed to congregations that already have property and buildings. There are other excellent guides for congregations engaged in building programs. This guide is meant to give you all the concrete and specific suggestions necessary to lessen significantly the ecological imprint made by the building and grounds presently under your care. Everything about the buildings/grounds and all the practices of those who use them have an impact on the environment. The purpose of this guide is to make you aware of these impacts and to offer choices that will render our property and practices friendly to Earth.

We believe that we are called as Christians to care for the Earth just as we care for our neighbors. In fact to care for the Earth *is* to care for our neighbors, because the state of the environment has implications for every one of us who live on this planet. Almost always, the negative environmental consequences have a greater impact on those most vulnerable—the poor, the elderly, the ill. We are living at a time when the choices we make have both local and global implications. One of the principles of ecology is that "everything is connected to everything else." Therefore human beings and all other life forms share a similar fate. We share a fragile web of creation on this earth that is affected by all the local and global conditions generated by human activity. We are called to see the earth as "good" and to love it as God loves all of life.

We have more power than we think we do. What can one person do? Or what can one congregation do? A lot! Do you realize that replacing one compact fluorescent light bulb for an incandescent one will save, over the ten year life of the bulb, the burning of five hundred pounds of coal! And it will save you between $30.00 and $50.00. Imagine how many global warming emissions we would save if even one-third of Christians put fluorescent bulbs in their homes and congregations. Then think about ways we could have a similar impact on water and wood and clean air and the problem of waste. People often say, "The churches are the largest grass roots organizations in the country. If we could get them mobilized to care for the earth, we could make a huge difference." Here is such an opportunity.

The Design of the Guide. This guide deals with 11 areas: (1) Worship, Education, and Office Practices; (2) Coffee Hour Potlucks, and Other Congregational Events; (3) Energy Use; (4) Paper and Wood Products; (5) Water Use; (6) Cleaning Products; (7) Food Choices; (8) Transportation; (9) Indoor Air Quality; (10) Nature Inside and Out; and (11)

Recycling and Waste. We believe these represent comprehensive coverage of most conditions and activities on church buildings and grounds.

In each of theses areas, we have sought to include the following sections:

- **Biblical quotations**: Our care for Earth is rooted in our foundational scriptures, which enable us to see this endeavor as integral to our long term vocation as humans.
- **Theological reflections**: Some ideas to help us see the way in which our beliefs and commitments as Christians inform our care for creation.
- **The ecological problem**: We need to act in full awareness of the larger environmental problems generated by ill-advised and destructive human activity, so that we can make informed choices and know why we are doing so.
- **The human justice issues involved**: All ecological conditions have an impact on human life. Mostly, the impact is on the poor, people of color, and third world countries—because these groups generally have less power and are vulnerable to greater exploitation and oppression.
- **What your congregation can do**: Here are concrete, step-by-step suggestions for actions to be taken by your congregation in reducing your ecological imprint and making your community more earth-friendly.
- **What you can do in your homes**: Here are concrete, step-by-step suggestions for actions to be taken by members of your congregation in reducing their ecological imprint and making their homes and work places more earth-friendly.
- **Other suggestions**: Designed to suggest ways to promote your efforts, have fund-raisers for the projects, engage youth and families, and strengthen the commitment of your congregation.
- **Resources**: Here is an annotated list of references to web sites, books, articles, and organizations that will provide additional information, suggestions, and inspiration for your efforts.

Taken together, these sections provide you with the tools you need to make a difference.

How to Use this Guide. We have tried to make this guide as practical and easy to use as possible. However, unless there is a plan to follow the suggestions included, it may go nowhere. Here are some different ideas about how you might use this guide.

1. Develop a plan to cover each area of the guide in sequence.
    a. Take a month or several months for each area. During each period, have a group assess your present conditions and practices, come up with a plan for each specific issues, make a judgment about the cost and savings/payback, evaluate the potential change in ecological impact, and make recommendations.
    b. During this same period, you can offer suggestions in bulletins and newsletters about what comparable things the members can do at home and at work.
    c. You can also promote the period—such as “The Recycling Months” or “Energy Season”—through bulletin boards and worship announcements.

2. Assign the different areas to different committees—such as, coffee hour to the Hospitality Committee; greening worship practices to the Altar Guild, energy to the Property Committee, recycling to the Youth Program, paper use to the office staff, green cleaning products to the maintenance staff, and so on.
    a. Give each group the resources they need to follow through, give them support in their endeavors, and work with them on their recommendations.
    b. Sort the recommendations according to those that are feasible both materially and financially, and seek to follow through quickly on those that can be accomplished.

3. Hold a congregational meeting or forum to introduce the opportunity to green your building and grounds. Seek ideas for the project and recruit volunteers to work in areas of interest.

4. Invite people from different areas of the congregation to form an Earthkeeping group to work their way through the guide at their pace, making suggestions as they go.

5. Hold a retreat in a natural location for your governing body of your parish. Provide them ahead of time with this guide and invite them to read through it as preparation for the retreat. Then brainstorm ideas about how to proceed. Prioritize the areas and develop a plan to carry out the process.

6. You will think of other ways. Keep in mind that global warming is the most crucial issue facing us as a human race. Reduction of energy use should be included in projects placed at the forefront of efforts on behalf of Earth.

Please do not be overwhelmed by the amount of material in this guide. We needed to be thorough and comprehensive. But the guide is full of specific suggestions. Treat the material as a smorgasbord and take one thing at a time. Celebrate that and move on to the next.

Renewing the Congregation. This is an adventure that has the possibility of renewing your congregation with a fresh commitment to care for creation and for one another in new ways—in our church, at home, and at work. Embrace it in the best possible light and enjoy the opportunity to live in ways that respect Earth through disciplined actions and decisions of kindness and care.

This is also an opportunity to witness to your larger community. The church exists for the sake of the world. Not only can we act in responsible ecological ways, but we can also imagine that our efforts could be a model for other churches, places of business, local government, and private citizens to be inspired and informed by your efforts.

Good luck with your process. Remember that we at the Web of Creation are constantly revising this guide. New editions will be placed online at our site. We welcome your ideas, corrections, and suggestions. Please contact us at webofcreation@lstc.edu.

For information about how you can bring care for creation into the life of worship, education, personal discipleship, and public ministry, please consult the Green Congregation Program at www.webofcreation.org.

Some Organizing Principles to Keep in Mind

1. Keep before you the reasons why you are doing this: Love for God's creation and a concern to be part of healing the Earth.

2. Keep an open process. Respect differences.

3. Keep the issues before people and seek the broadest support for changes.

4. Act out of a comprehensive vision. Avoid a single focusing on a pet project or a pet peeve.

5. Be delighted when a few people are involved. That is all it takes to be a catalyst.

6. Try to get as many people as possible involved at different levels with diverse projects.

7. Work on some projects that have the greatest chance for success.

8. Work on some projects that can be done easily and that involve little effort or cost.

9. Choose some projects that have the greatest environmental impact.

10. Do some projects that have high visibility as a way of promoting the program and the concerns.

11. Work on projects at first that have wide support and go to more controversial ones later.

12. At the same time, challenge people to examine their lifestyle and enact change.

13. Engage in education for those actions that require people to adapt their behavior in significant ways.

14. Avoid focusing on the negative or those who may disagree. Celebrate what you do accomplish and do not worry about what does not get done.

15. Do not become the environmental police correcting others for their behavior. Rather, find positive ways to change behavior and reward it.

16. Do not assume others know what you know or think as you think. Offer explanations and information as to why changes should be made.

17. Find ways to have people relate to nature directly. We will not restore what we do not love.

18. Act out of a love of nature and have fun caring for it!!

Section 1: Environmental Impacts of Worship, Education, and the Office

In his hand are the depths of the earth;
the heights of the mountains are his also.
The sea is his, for he made it,
and the dry land, which his hands have formed.
O come, let us worship and bow down,
let us kneel before the Lord, our Maker!
For he is our God,
and we are the people of his pasture,
and the sheep of his hand. (Psalm 95:4-7a)

In the beginning when God created the heavens and the earth, the earth was a formless void and darkness covered the face of the deep, while a wind from God swept over the face of the waters. Then God said, "Let there be light"; and there was light. And God saw that the light was good. (Genesis 1:1-4a)

Then God said, "Let us make humankind in our image, according to our likeness; and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the wild animals of the earth, and over every creeping thing that creeps upon the earth." (Genesis 1:26)

When you enter the land that I am giving you, the land shall observe a sabbath for the Lord. Six years you shall sow your field, and six years you shall prune your vineyard, and gather in their yield; but in the seventh year there shall be a sabbath of complete rest for the land, a sabbath for the Lord: you shall not sow your field or prune your vineyard. You shall not reap the aftergrowth of your harvest or gather the grapes of your unpruned vine: it shall be a year of complete rest for the land. (Leviticus 25:2b-5)

If you follow my statutes and keep my commandment and observe them faithfully, I will give you your rains in their season, and the land shall yield its produce, and the trees of the field shall yield their fruit. Your threshing shall overtake the vintage, and the vintage shall overtake the sowing; you shall eat your bread to the full, and live securely in you land. And I will grant peace in the land. (Leviticus 26:3-6a)

But you shall keep my statutes and ordinances … otherwise the land will vomit you out for defiling it. (Leviticus 18:26a, 28a)

Is it not enough for you to feed on the good pasture, but you must tread down with your feet the rest of your pasture? When you drink of clear water, must you foul the rest with your feet? And must my sheep eat what you have trodden with your feet, and drink what you have fouled with your feet? (Ezekiel 34:18-19)

Many Shepherds have destroyed my vineyard,
they have trampled down my portion,
they have made my pleasant portion
a desolate wilderness.
They have made it a desolation;
desolate, it mourns to me.
The whole land is made desolate,
but no one lays it to heart. (Jeremiah 12:10-11)

Six days you shall do your work, but on the seventh day you shall rest, so that your ox and your donkey may have relief, and your homeborn slave and the resident alien may be refreshed. (Exodus 23:12)

You shall not muzzle an ox while it is treading out the grain. (Deuteronomy 25:4)

When I shut up the heavens so that there is no rain, or command the locust to devour the land, or send pestilence among my people, if my people who are called by my name humble themselves, pray, seek my face, and turn from their wicked ways, then I will hear from heaven, and will forgive their sin and heal their land. (2 Chronicles 7:13-14)

Theological Reflections on the Ecological Problem and Justice

God has created the earth. It is the pasture created by God for us to live in. And this great creation is one reason for our worship of God – the Creator.

In the beautiful cadence of the narrative of the six days of creation, we are able to see our God who carefully checks out what has been created, to see that it is good, before continuing along the process of creating. In each step of creation, the environment is prepared for what will be created next. Before vegetation is created, the cycles of sunshine and darkness and the assignment of spaces for land and water necessary to sustain it were created, and seen to be good. Swarms of living creatures were created only after the environment that could sustain such life had been created and seen to be good.

We can see how each aspect of this marvelous web of creation nurtures the next. Finally, God gave "dominion" over creation to humankind. With this dominion over the rest of creation came the stipulation to care for creation, often in very specific ways.

Just as we are called to worship God as part of our sabbath we are to allow creation to worship God through its own sabbath rest. We suffer "burn out" when we work all day every day. Creation "burns out" when we work it every day every year. We are called to be good stewards, to return to God that which is God's, and to return it with increased ability. This is impossible to do if we diminish the land by using it up.

If we follow the will of God to care for creation, peace and prosperity will flourish in the land; if not, the land will spit us out. In spite of knowing that God's will is for us to nurture creation and to foster its increase, we have become care-less with God's creation. We have

trodden down the fields and fouled the water that God has given us, even as we have been blessed with bounteous harvests and overflowing supermarket shelves. In 1980 over 800 families were evacuated from their homes in the Love Canal neighborhood of Niagara Falls, New York. Times Beach, Missouri was wiped off the map in 1988. These are but two of the places that were once pleasant to live in which have now become desolate.

Twenty years of awareness have not made the problem go away. Water supplies for millions of people living near Denver, Colorado and along the Columbia River in Washington and Oregon are threatened due to contamination by military-related activities that have occurred in these places. Fish and game are unsafe to eat and the areas are unsafe to live in. New York, Missouri, Colorado, Oregon, and Washington are only a few of the major problems. Many, many more are closer to each of our homes, and they affect us in the place where we live, work, and play.

As society has become technified, more and more people have become distanced from the land and, more importantly, from a sense of their place in creation. Jeremiah and Ezekiel expressed their concern about the Israelites' poor relationship with God by pointing out the Israelites' poor relationship to creation. Part of being in a right relationship with God is being in a right relationship with God's creation – including the rest of humanity. In giving the command for sabbath, God was saying that *all* should rest. This is also matter of justice. Animal and human servants must also have the opportunity to experience a right relationship with God—the opportunity to be justified—through the experience of sabbath. Sabbath is not about the leisure of those who are rich. It is a matter of justice for all. In recognizing the sabbath, God is also calling us to recognize our interconnectedness and interdependence on the rest of creation, and on the rest of humanity. We are not to muzzle the ox, hold back creation, as it works for us. It must be allowed to collect the "wages" it is due, precisely as those who toil in the field or vineyard for a master can expect to be paid a fair wage for their effort. Through this exchange, humanity is justified with creation like the relationship between the owner and servant is made right once the servant has been paid for the work that has been done.

It is time for the church to look carefully to see how we can better honor our sacred task of caring for and nurturing God's creation. How can we through our worship, prayer, and other activities humbly approach God so that the land may be healed and sustain our lives in the future?

What To Do as a Congregation

As a congregation you can provide a worship experience and an educational environment for members and for your communities that foster a sense of place within creation. You can use every decision and every change as an opportunity to educate members to practices for their homes.

In Worship

Central to our worship space is the cross. The cross points up towards God, it points out toward others, and it points down as it is rooted in the earth. These relationships were established, for us, from the beginning by God. These relationships, with God, with humanity, and with the earth, are essential for life.

Something to keep in mind as change is contemplated is that many people are hesitant to change. They like the comfort of the routines they know. These routines and habits have become part of their overall worship. It is important to be sensitive to a "period of mourning" that some members may need as changes are made. However, life is change. When we cease to change and grow, we die.

- Paraments: Look not only at the images on the parament, but how it is made (by whom) and what it is made of. How awful it would be to present a beautiful message about God's wondrous gift of creation on a material that destroys the earth in its production and encourages children to go hungry through underpaying their parents.

- Flowers on the alter/in the sanctuary: Using living plants in pots rather than cut flowers that are dying, which are almost never grown in an environmentally-friendly manner (unless they come from the church's or a member's home grown, organic, garden.)

- Where there is space, include larger plants or even bushes in the sanctuary. They add beauty to the space, enhancing the worship atmosphere as well as act as air-purifiers. (Use organic plant treatments on these when necessary.)

- Candles: Beeswax candles are the most environment-friendly choice. Paraffin wax candles are petroleum-based; this is also the type of wax typically found in "liquid" candles. The container/"candle" for liquid wax candles is generally made of nylon, a petroleum-based plastic, although it can be highly recyclable – ask your supplier for the recycled material content of your containers (both the metal and plastic parts) if you must use liquid wax candles.

- Communion elements: Are the grain and grapes grown for your bread and wine grown in an organic, wholesome manner? (Is the bread made from whole grain wheat or barley?) Are they produced locally so there is less pollution to the environment in transporting them to church and creating a greater connection to your specific, local, "place" in creation? (Is the wine from a local winery, the bread grains from local farmers, and the bread made by a local baker?)

- Palm fronds: Fronds for Palm Sunday are now available through the fair trade cooperative system that ensures a living wage to the growers of palms used to celebrate this festival day.

- Bulletins: How can less paper be used in the bulletin? Use an environment-friendly paper, one that contains high-recycled content or is not wood-based. Are there ways to

eliminate the bulletin entirely? And be sure to place an attractive container (basket) at the sanctuary exits so that bulletins can be recycled.

- Disposable communion cups: Besides the harm to the environment caused by making and tossing out all of this plastic, what does it says about the sacredness of the blood of Christ if we throw away sacramental vessels every week? Wash non-disposable cups in environmentally-friendly detergents.

- Wireless microphones: They use a lot of batteries. How are batteries disposed of? (Is there a place in the church to collect batteries so they can be recycled?) Can rechargeable batteries be used?

- Are there days in the spring and fall when you could open windows in the church instead of turning on the air conditioning? Bring your indoor worship space outdoors, noise and all, so that you truly are worshiping in your "place", in your community.

Some additional passages from the Bible:

The land shall not be sold in perpetuity, for the land is mine; with me you are but aliens and tenants. Throughout the land that you hold, you shall provide for the redemption of the land. (Leviticus 25: 23-24)

How long will the land mourn,
and the grass of every field wither?
For the wickedness of those who live in it
the animals and the birds are swept away,
and because people said, "He is blind to our ways." (Jeremiah 12:4)

For the word of the Lord is upright,
and all his work is done in faithfulness.
He loves righteousness and justice;
the earth is full of the steadfast love of the Lord.
By the word of the Lord the heavens were made,
and all their host by the breath of his mouth.
He gathered the waters of the sea as in a bottle;
he put the deeps in storehouses.
Let al the earth fear the Lord;
let all the inhabitants of the world stand in awe of him.
For he spoke, and it came to be;
he commanded, and it stood firm.
The Lord brings the counsel of the nations to nothing;
he frustrates the plans of the peoples. …
A king is not saved by his great army;
a warrior is not delivered by his great strength.
The war horse is a vain hope for victory,
and by its great might it cannot save.
Truly the eye of the Lord is on those who fear him,
on those who hope in his steadfast love,
to deliver their soul from death,
and to keep them alive in famine.
(Psalm 33:4-10, 16-19)

You set the earth on its foundations,
so that it shall never be shaken.
You cover it with the deep as with a garment;
the waters stood above the mountains. …
You make springs gush forth in the valleys;
they flow between the hills, …
The trees of the Lord are watered abundantly,
the cedars of Lebanon that he planted.
In them the birds build their nets;
the stork has its home in the fir trees.
The high mountains are for the wild goats;
the rocks are a refuge for the coneys. …
O Lord, ho manifold are your works!
In wisdom you have made them all;
the earth is full of your creatures.
Yonder is the sea, great and wide,
creeping things innumerable are there,
living things both small and great.
(Psalm 104:5-6, 10, 16-18, 24-25)

But ask the animals, and they will teach you;
the birds of the air, and they will tell you;
ask the plants of the earth, and they will teach you;
and the fish of the sea will declare to you.
Who among all these does not know
that the hand of the Lord has done this?
In his hand is the life of every living thing
and the breath of every human being.
(Job 12:7-10)

You visit the earth and water it,
you greatly enrich it;
the river of God is full of water;
you provide the people with grain,
for so you have prepared it.
You water its furrows abundantly,
settling its ridges,
softening it with showers,
and blessing its growth.
You crown the year with your bounty;
your wagon tracks overflow with richness.
The pastures of the wilderness overflow,
the hills gird themselves with joy,
the meadows clothe themselves with flocks,
the valleys deck themselves with grain,
they shout and sing together for joy.
(Psalm 65: 9-13)

Ah, you who join house to house,
who add field to field,
until there is room for no one but you,
and you are left to live alone
in the midst of the land!
The Lord of hosts has sworn in my hearing:
Surely many houses shall be desolate,
large and beautiful houses, without inhabitant.
For ten acres of vineyard shall yield but one bath,
and a homer of seed shall yield a mere ephah.
(Isaiah 5:8-10)

For the creation waits with eager longing for the revealing of the children of God; for the creation was subjected to futility, not of its own will but by the will of the one who subjected it, in hope that the creation itself will be set free from its bondage to decay and will obtain the freedom of the glory of the children of God. We know that the whole creation has been groaning in labor pains until now.
(Romans 9:19-22)

Hear the word of the Lord, O people of Israel;
for the Lord has an indictment against the
inhabitants of the land.
there is no faithfulness or loyalty,
and no knowledge of God in the land. …
Therefore the land mourns,
and all who live in it languish;
together with the wild animals
and the birds of the air,
even the fish of the sea are perishing.
(Hosea 4:1, 3)

The good leave an inheritance to their children's
children,
but the sinner's wealth is laid up for the
righteous.
The field of the poor may yield much food,
but it is swept away through injustice.
(Proverb 13:22-23)

I will make for you a covenant on that day with the wild animals, the birds of the air, and the creeping things of the ground; and I will abolish the bow, the sword, and war from the land; and I will make you lie down in safety. (Hosea 2:18)
And (Jesus) said to them, "Take care! Be on your guard against all kinds of greed; for one's life does not consist in the abundance of possessions."
(Luke 12:15)

When the poor and needy seek water,
and there is none,
and their tongue is parched with thirst,
I the Lord will answer them,
I the God of Israel will not forsake them.
I will open rivers on the bare heights,
and fountains in the midst of the valleys;
I will make the wilderness a pool of water,
and the dry land springs of water.
I will put in the wilderness the cedar,
the acacia, the myrtle, and the olive;
I will set in the desert the cypress,
the plane and the pine together,
so that all may see and know,
all may consider and understand,
that the hand of the Lord has done this,
the Holy One of Israel has created it.
(Isaiah 41:17-20)

Praise the Lord!
Praise the Lord from the heavens;
praise him in the heights! …
Praise him, sun and moon;
praise him, all you shining stars!
Praise him, you highest heavens,
and you waters above the heavens! …
Let them praise the name of the Lord,
for he commanded and they were created. …
Praise the Lord from the earth
you sea monsters and all deeps,
fire and hail, snow and frost,
stormy wind fulfilling his command!
Mountains and all hills,
fruit trees and all cedars!
Wild animals and all cattle,
creeping things and flying birds!
(Psalm 148:1,3-5,7-10)

Education

Education involves both learning and experiencing. A curriculum that teaches care and gratitude for our God-given environment, yet uses un-earth-friendly Styrofoam and plastics in school projects, is counterproductive. How we teach is as important as what we teach.

With children:

- Have recycle bins available in each classroom. Make recycling as convenient as possible.

- Use recycled paper. Encourage the children to put their scraps into the recycle bin.

- If you have a day school (pre-school or elementary) you may use a large amount of hot water—consider installing a solar or geothermal system. (See our section on energy use.)

- Sunday school teachers should be encouraged to do projects that have meaning. Generating craft projects usually generates waste. Cut down on the amount of meaningless waste the classes generate.

- Avoid using craft foam. This is an environmental disaster. It releases toxins into the environment in production. It continues to release toxins into the air when you open the package at church. It is not biodegradable. (Another great reason not to use it; glue doesn't stick well to it, so projects are frustrating to make and tend to fall apart on the way home.)

- Avoid using wax crayons. Besides paraffin wax being petroleum-based, once a child has colored on a paper with a wax crayon it is no longer recyclable. Alternatives include colored pencils and washable markers.

With adults:

- Plan for a sort of Show and Tell in the church—let people know what the things they should buy look like. Give church members an opportunity to show off the green practices they use at home.

- Think twice about what will be photocopied and given out. Most materials that adults get in forums end up in the trash within a day or two. Use the chalkboard or electronic presentation material instead. If you do need to photocopy a handout, ask two or more people to share. Often this will also lead to more conversation.

- While we want to encourage recycling, this ought not translate into the church becoming a dumping ground for parishioners' unwanted stuff. Accept only those gently used materials that the congregation has a use for. This provides an example for members, encouraging them to look for how they can utilize reused material in their own lives while discouraging people from over consuming in the name of charity.

Office

The office often gives the first impression of the church to visitors. As such, it should not be simply a place of welcome and efficiency it should also reflect our theology. To proclaim care and gratitude for the earth in the pulpit and teach it in the classrooms and in our publications, yet not practice it in such an obvious place as our church office, is to be hypocritical. When we take shortcuts to save a few pennies we may well be wasting the earth. We praise and worship God in all that we do, including how we administer the congregation and its activities.

- Bring plants into the office. It is a reminder of God's creation in the work environment and contributes to better air quality. Use organic fertilizers and natural insect repellants when necessary.

- If possible, reduce artificial lighting. Large, energy-efficient windows allow us to be more connected to the world around us.

- There are many places to purchase refilled/recycled ink and toner cartridges. Cut down on the amount of plastic you throw away, turn your empty cartridges in to be refilled.

- Use recycled paper (and unbleached paper where possible).

- Cut down on junk mail. Call suppliers that send multiple catalogues, requesting that they send only one copy of each (you don't need 12 copies of Oriental Traders). Take your congregation off junk mail solicitations.

- Limit the number of copies you make. Do not make more copies than needed. Make two-sided copies. Requiring everyone to enter into a log how many copies they made and for what use, can help everyone think twice about copier use and re-consider what is really necessary.

- Don't do double mailings. In order to qualify for bulk mailings, many churches send some members two or three copies of newsletters and other mailings. This may seem cost effective, but it is not good earth care.

- E-mail instead of snail-mail your newsletter to those who have e-mail access.

- When you have paper that has only one side printed headed for the recycling bin, keep it and use the other side as scratch paper. You can cut it into quarters for scratch pads.

- Old computers, printers, copiers, etc. need to be properly disposed. Circuit boards contain toxic materials, and some items or parts can be recycled.

- When replacing equipment, choose the most energy-efficient model. Look for the Energy Star rating on the office equipment you are considering to purchase to help you make your choice.

See our sections on paper, energy, recycling, air quality, and nature inside and out for more information on these topics, as well as more details for making additional changes in how the church is administered.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into everyday life. You can educate yourselves and your neighbors about your place in creation, your neighborhood's and city's ecosphere—what are the most important features of the environment in which you live your daily life—and how to preserve and nurture it. Educating your children is one of the first steps you can take to making the world better for future generations.

- Recycle your home office paper. Buy a shredder and shred and recycle your bills and other documents when you no longer need them.

- Purchase the most energy efficient home office equipment. Look for the Energy Star rating to help you make your purchase.

- Consider whether you really need to buy a new piece of equipment. Is it essential to have it at home? If so, is there an option to get a refurbished model, most often you do not need the latest, greatest, fastest model at home anyway.

Resources

Websites

- http://www.c3mn.net: Congregations Caring for Creation offers worship, ritual, and spiritual resources as well as educational materials.

- http://www.seasonofcreation.com: Season of Creation offers liturgies and sermon themes celebrating God in and throughout creation.

- http://www.webofcreation.org: Web of Creation has resources for religious education and worship as well as information on some ecological problems and their possible solutions.

- http://www.green-office.org.uk: Friends of the Earth Scotland offers ideas on how to green the office with fact sheets and online audit resources.

- http://www.energystar.gov: The USEPA and USDOE Energy Star program offering product advice for improving energy efficiency including:
  - http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductCategory&pcw_code=HEF: home electronics (battery chargers, cordless phones, TVs/VCRs/DVDs)

- ◊ http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductCategory&pcw_code=OEF: office equipment (computers and more)

Books

Morgan, Ernest. Jennifer Morgan, ed. 2001. *Dealing Creatively with Death: A Manual of Death Education and Simple Burial*, 14th ed. Hinesburg, VT: Upper Access.

Townsend, A. K. 1998. *The Smart Office: Turning Your Company on Its Head*. Olney, MD: Gila.

Activities

- ♦ Have an earth care display in the narthex or fellowship hall. Put something up on the bulletin board, so visitors know you are a green congregation.

Bulletin/Newsletter Green Notes

- ♦ Include one or two suggestions on earth care practices in every bulletin and newsletter. This helps keep members mindful of their own practices and also demonstrates that this is a continuing commitment and lifelong concern.

- ♦ Have the committees of the church include their earth care practices in the annual reports. This is not a concern of just one group, but of the church at large.

Section 2: Environmental Impacts of Coffee Hour, Potlucks and Other Congregational Events

Hear, O Israel: The Lord is our God, the Lord alone. You shall love the Lord your God with all your heart, and with all your soul, and with all your might. Keep these words that I am commanding you today in your heart. Recite them to your children and talk about them when you are at home and when you are away, when you lie down and when you rise. Bind them as a sign on your hand, fix them as an emblem on your forehead, and write them on the doorposts of your house and on your gates. (Deuteronomy 5:4-9)

"I give you a new commandment, that you love one another. Just as I have loved you, you also should love one another. By this everyone will know that you are my disciples, if you have love for one another." (John 13:34-35)

Think of us in this way, as servants of Christ and stewards of God's mysteries. Moreover, it is required of stewards that they be found trustworthy. (1 Corinthians 4:1-2)

But just as we have been approved by God to be entrusted with the message of the gospel, even so we speak, not to please mortals, but to please God who tests our hearts. (1 Thessalonians 2:4)

Finally, brothers and sisters, we ask and urge you in the Lord Jesus that, as you learned from us how you ought to live and to please God (as, in fact, you are doing), you should do so more and more. (1 Thessalonians 4:1)

Then Jesus took the loaves, and when he had given thanks, he distributed them to those who were seated; so also the fish, as much as they wanted. When they were satisfied, he told his disciples, "Gather up the fragments left over, so that nothing may be lost." (John 6:11-12)

Theological Reflections

As Christians we are called to love the Lord our God, we are called to love our neighbors as ourselves, and we are called to love the environment. The latter is easy to forget even as we strive to keep the sabbath rest. We often do not equate caring for creation with the care and love of God and our neighbors. This is a problem that has put the earth in the crisis situation that it is in today. One area of particular significance for congregations is the way that we manage our church activities and functions. Much that we do is wasteful and bad for the environment, which is often easy to forget as we get caught up in the communal enjoyment of these events. It is important in all that we do to remember that we are called to be stewards of the earth and to care for the Lord's creation. We can work together, as sisters and brothers, to live our lives in a way that is pleasing to God and God's creation, taking care to not be wasteful with the abundance that God has given us.

The Ecological Problem

Coffee: What appears to be a harmless time of conversation and fellowship can be quite detrimental to the environment. Recently new varieties of coffee trees have been introduced that can be grown out in the open rather than under the cover of other, taller, species—how they were originally grown in Africa. While these new varieties have increased the yield of beans per acre, these increases have come with a price; large quantities of chemical fertilizers and pesticides must be used to maintain yields and the lack of additional forestation on these farm acreages has increased soil erosion, as well as the toxic run-off from the chemicals that must be applied to these fields. What was once naturally an organic and wholesome interaction with its surrounding environment is noxious and has toxic effects miles away as chemicals run downstream.

Soil erosion is a bigger problem since coffee growers started cutting back the old growth forest cover above their trees. Traditionally coffee was grown by clearing the forest of undergrowth, giving the small coffee trees a place to grow, while leaving the forest canopy intact except for occasionally pruning branches to increase the amount of sunlight reaching the coffee trees when the canopy became too dense. While farming in this manner is somewhat invasive to the forest, it is only mildly so—removing the underbrush but leaving the diversity of the rest of the rustic forest unchanged. The huge variety of trees surrounding the coffee trees in these traditional settings provide soil nutrients, while their complex network of roots helps to prevent erosion.

All of the trees also host many species of birds, including many migratory birds that winter in the tropics. Flycatchers, hummingbirds, redstarts, swifts, tanagers, thrushes, vireos, warblers, and many others all spend some of their time in the trees shading traditional coffee plantations.

> The few studies that have been conducted have found that the diversity of migratory birds plummets when coffee is converted from shade to sun. One study found a decrease from 10 to 4 common species of migratory birds. As for the overall avifauna, studies in Colombia and Mexico found 94-97% fewer bird species in sun grown coffee than in shade grown coffee. This comes as no surprise since over two-thirds of the birds are found in the canopy of shade plantations and less than 10% are found foraging in coffee plants.[1]

Something to remember the next time you see—or don't see—your favorite songbird as you drink your morning coffee. With increasing areas of sun grown coffee, up to 70% in some countries, the habitat for migratory birds is shrinking. Regardless of how much of their habitat may—or may not—remain in the US, if a bird's tropical habitat is destroyed

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[1] Smithsonian Migratory Bird Center. "Migrants and Coffee: What's the Connection?" Found at the URL: http://nationalzoo.si.edu/ConservationAndScience/MigratoryBirds/Fact_Sheets/default.cfm?fxsht=1 when accessed on June 16, 2006.

they will face extinction; and the insects and other pests that they feed on while in the US will increase, causing us to call for increased use of chemical pesticides.

Styrofoam: Churches choose to use Styrofoam cups to serve coffee for a variety of reasons. They are convenient, they keep the coffee hot, and there are no cups to wash afterwards. Some congregations do not realize the damage done to the environment; others do not believe the damage is significant enough to worry about. However, this is not the case. The Styrofoam (polystyrene foam—a mixture of air and the plastic polystyrene) that is being discarded each week is a big deal. According to *The Recycler's Handbook* Americans use more than 25 billion polystyrene foam cups each year (that is 85 cups for each and every person). If 200 people came to church and used a single Styrofoam cup each Sunday, (200 people times 52 weeks per year = 10,400 cups) they would use and throw away enough cups to fill 30 32-gallon trash cans. Since there is not a practical way to recycle Styrofoam every cup must be hauled to the landfill, where its component chemicals will eventually leach out and become a potential problem for future generations.

In general, most Styrofoam cups become trash. There are attempts at recycling polystyrene foam but, unfortunately, recycling Styrofoam is quite difficult and only a few facilities are capable of the process. Not only is it hard to find a place to recycle your Styrofoam, the recycled product is also not suitable for making more cups. Therefore "recycling" your Styrofoam cup does not reduce the amount of raw material needed to make your next polystyrene cup, and there are very few uses for recycled polystyrene.

When we throw these cups away, the styrene (also called vinyl benzene) ends up in the landfill where it becomes a source for the benzene that ends up contaminating the soil and groundwater. If the effects from all of these Styrofoam cups end up being concentrated at the landfill, the negative effects on the environment actually begin from the moment that they are manufactured. Polystyrene foam is made from benzene. Benzene, a known carcinogen, is converted to styrene, polymerized, and finally injected with gases in order to produce the foam-like product. The gases are either HCFC-22, which contributes to the destruction of the ozone layer, or pentane, a source of smog.[2] And benzene itself is made from oil, and sometimes coal, in complex processing plants that create additional pollution and that consume more oil to power the production process.

Ceramic mugs and glasses are reusable containers that are good alternatives Styrofoam for holding hot and cold beverages at congregational events. They are much more durable than Styrofoam and are highly "reusable," the second-best way (after reducing usage) to lowering the amount of trash we send to landfills and incinerators.

Potlucks: Styrofoam is also an issue at other church functions. However, Styrofoam is not the end of the problem. There are numerous paper and other products that are being used

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[2] The EarthWorks Group. 1990. *The Recycler's Handbook: Simple Things You Can Do.* Berkeley: EarthWorks.

and then discarded, many of which are incapable of being recycled. Church functions, particularly potlucks, but also others dinners and receptions, often involve the use of plastic cutlery, paper plates, disposable napkins. It would be preferable to utilize stainless flatware, ceramic plates and cups, and cloth napkins. However, we must then also be mindful of environmentally-friendly methods and products for cleaning them. There are many cleaning products that are harmful for the environment and need to be avoided. It is important to consider what the trade-offs will be with each action taken. In using "real" dishware and linens, more energy, water, and detergents will be needed to clean these items—and, additional, environmentally-informed choices will need to be made. Many details on each of these issues can be found in our sections dealing with food, paper and wood, water, energy, and chemical use.

Human Justice Issues at Stake

The coffee trade dates back to colonial times where it became a significant cash crop for colonies in the tropics to export to the mother country. Today it is big business with the exporters in several countries purchasing beans from the middlemen (often called "coyotes"), who buy the beans from farmers, or processors, who convert the raw green beans to a marketable product, so that millions of dollars of coffee beans can be shipped to the US alone. Once a US broker buys the beans, they are sold to a coffee company to be milled before being distributed to stores or cafes for purchase by the consumer. Everyone takes their "cut" at each step along the way, and the beans for which the farmer received a few pennies cost several dollars to the consumer in the US.

Most unfortunate of all is that often the few pennies that the farm does receive often will not cover his cost of growing the beans. The farmer is in a constant struggle to put in another crop and stay on the land while living in the poorest of conditions without adequate housing, healthcare, and education. So even when we pay a high price for that cup of coffee from the corner cafe, the farmer does not receive a just wage.

"Fair Trade" is an alternative process by which farmers receive more for their product. Fair trade organizations in the US work with farmer cooperatives in the various countries to harvest and process the beans so that the farmers are guaranteed a living wage. (Often this is accompanied with help to show the farmers the best ways to grow their crop in a manner that is environmentally sustainable.) The organization then sees that the beans are milled and distributed to the consumer for a fair price.

What To Do as a Congregation

As a congregation you can purchase and use only organic, shade-grown, fair trade coffee, organic produce, and other "fair trade" products for your congregational events and reduce the amount of disposable materials used on site, as well as educating members and your communities to shift towards sustainable living. You can use every decision and every change as an opportunity to educate members to practices for their homes.

To take "the next step," go beyond your congregation's coffee hours and potlucks and promote the best use of coffee, food, and dinnerware for community functions and other activities, such as weddings, held in your facility.

- Avoid making garbage; consume less; then compost and recycle more.
- Eliminate Styrofoam and plastic cups and disposable paper and plastic product use at all church functions.
- Encourage members to bring in their own mugs/cups to use for beverages. Provide cupboard or wall space for people to keep mugs at the church. (Preferably near the coffee pots!)
- Encourage people to bring their own dishware to potlucks and functions.
- Strive to use local/organic/fair trade as well as vegetarian food options as much as possible. Become aware of what is sold through fair trade channels. Chocolate and tea, as well as coffee are universally available in the U.S. (Some Co-Op groceries sell fair trade items in addition to food, or see the web for online options).
- If elimination of all disposable products is not possible, there are some "biodegradable" options available. Biocorp sells several biodegradable service items, including plates, cups, bowls, and cutlery. Some of their biodegradable plastic options come from non-organic sources, however. See their website at the URL: http://www.biocorpaavc.com for more details.

Additional steps to take can be found in our related sections on food, paper and wood, water, energy, and chemical use.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into everyday life. You can educate yourselves and your neighbors about organic, shade-grown, fair trade coffee, organic produce, other "fair trade" products as well as reducing the amount of disposable items that you use at home. Educating your children is one of the first steps you can take to making the world better for future generations.

- Avoid making garbage; consume less; then compost and recycle more.
- Eliminate Styrofoam and plastic cups and disposable paper and plastic product use.
- Strive to use local/organic/fair trade as well as vegetarian food options as much as possible. (Some Co-Op groceries sell fair trade items in addition to food, or see the web for online options).

As with congregational actions, additional steps to take at home can be found in our related sections on food, paper and wood, water, energy, and chemical use.

Resources

Websites

- http://americanradioworks.publicradio.org/features/food_politics/index.html: American RadioWorks, public radio's national documentary unit, webpage featuring the documentaries "Engineering Crops in a Needy World," "A Bean of a Different Color," and "The Campaign to Humanize the Coffee Trade."

- http://www.equalexchange.com/interfaith-program: Equal Exchange's webpage for their coffee projects with American Friends Service Committee, Church of the Brethren, Lutheran World Relief, Mennonite Central Committee, Presbyterian Church, USA, United Church of Christ, United Methodist Committee on Relief, and Unitarian Universalist Service Committee.

- http://www.crsfairtrade.org/coffee_project/index.htm: Catholic Relief Services coffee project webpage.

- http://www.er-d.org/waystogive_63273_ENG_HTM.htm: "Bishops Blend", the coffee offered by Episcopal Relief and Development.

- http://www.earthresource.org/campaigns/capp/capp-styrofoam.html: Information on polystyrene foam from the Earth Resource Foundation's "Campaign Against the Plastic Plague."

- http://www.reduce.org: Minnesota Office of Environmental Assistance website with many helpful ideas on reducing waste in your lifestyle—including the use of composting.

- http://www.greenguardian.com: The Solid Waste Management Coordination Board for the Minneapolis/St. Paul area has helpful hints in reducing your waste.

Books

Alternatives for Simple Living. 1997. *The Alternative Wedding Book: Create a Beautiful Wedding that Reflects Your Values and Doesn't Cost the Earth*. Kelowna: BC: Wood Lake.

Pogue, Carolyn. 1997. *Treasury of Celebration: Create Celebrations that Reflect Your Values and Don't Cost the Earth*. Kelowna: BC: Wood Lake.

Twigg, Nancy. 2003. *Celebrate Simply: Your Guide to Simpler, More Meaningful Holidays and Special Occasions*. Counting the Cost.

Activities

There are many and numerous ways that the church can acquire the necessary supplies to eliminate paper products. A parish could ask members not only to donate their time but their belongings as well. If members are planning on getting rid of old coffee cups, dishes, linen napkins, clothes, or towels, ask them to instead donate them to the church. The church could have a “dish drive” where members can bring in these items after collecting them from garage sales and thrift stores. This will then avoid the disposal of these items into landfills, as well as allow the congregation to avoid the use of various paper products.

Bulletin/Newsletter Green Notes

Keep the congregation informed about the green process. In your newsletters and bulletins includes pieces regarding the current project that is taking place. For example all publications could remind people to B.Y.O.M. (bring your own mug) and what additional items are needed to complete the church’s dish service (keep your eyes open for these service pieces on garage sale Saturday!!).

One important thing that could be included is ideas/challenges for people to implement at home. They could be very simple, yet a way to take what is being done at church into the larger community. One idea could be to have a challenge of the month such as eliminating disposable paper and plastic use at home.

Section 3: Environmental Impacts of Energy Use

As long as the earth endures,
    seedtime and harvest, cold and heat,
summer and winter, day and night,
    shall not cease. (Genesis 8:22)

"You are the light of the world. A city built on a hill cannot be hid. No one after lighting a lamp puts it under the bushel basket, but on the lampstand, and it gives light to all in the house. In the same way, let your light shine before others, so that they may see your good works and give glory to your Father in heaven." (Matthew 5:14-16)

God understands the way to it,
    and he knows its place.
For he looks to the ends of the earth,
    and sees everything under the heavens.
When he gave to the wind its weight,
    and apportioned out the waters by measure;
when he made a decree for the rain,
    and a way for the thunderbolt;
then he saw it and declared it;
    he established it, and searched it out. (Job 28:23-27)

Theological Reflections

The Bible says that the earth and its seasons will always be with us. Whatever the season, we need energy to sustain our lives. Not only for cooking our meals and providing light to see at night but also to supply us with safe and comfortable places to live. Energy heats our homes in winter and provides cooling during the scorching days of summer. Our use of this energy has an immense impact on God's creation. There are many sources of the energy that we use: coal, geothermal, natural gas, nuclear, oil, solar, wind and so on; however, not all energy types are the same. Coal, natural gas, and oil are energy sources that have a finite capacity for fueling our needs. In short they are not readily renewable. Other energy sources—solar and wind, for example—have a much greater capacity to meet our needs in a sustainable manner. Regardless of its source, all forms of energy consumption *do* have an impact on our environment. As such, if we are to be faithful stewards of God's creation we must find the most efficient ways possible to both produce and consume the energy that we use.

The Ecological Problem

Our current patterns of energy use are destroying God's creation. The ecological impact of our energy use is not only a matter of faith and good stewardship, but it is also a matter of sustainability—even survival. Carbon dioxide emissions—a direct byproduct of our current energy system—are responsible for global warming. Global warming is the term applied to the fact that the earth's temperature has increased by about 1°F during the past

100 years.[3] This does not appear to be a large change in temperature, but it is significant. One indication of increasing global temperatures is that the ten hottest years on record have all occurred since 1990; ten of the past fifteen years have been at or near record high temperatures.[4] (2005 was the hottest on record with an average global surface temperature of 58.6°F[5]). Higher temperatures are occurring because there are larger amounts of heat-retaining gases in the atmosphere than ever recorded. The amount of carbon dioxide (created when we burn things – particularly fossil fuels), methane (released from pockets where it has been trapped in the earth by human mining and drilling activities), nitrous oxide (created during agricultural and industrial activities and also as a product of burning – such as fossil fuels or solid waste for energy production), and other, human-made, gases has increased in the atmosphere where they trap the heat continually produced by the earth as it absorbs sunlight.[6] Energy production emits heat-retaining gases (or "greenhouse gases," so named because they act like the windows of a greenhouse – they let sunlight enter and hold in the resulting heat) at all stages throughout the process and contributes significantly to the problem of global warming. This increase is causing glaciers and ice caps to melt, raising sea levels. It is changing regional climates, altering crop yields and water supplies, as precipitation patterns change with the change in temperature.[7] There is also a link between higher temperatures and the severity of weather, particularly hurricanes.[8] The global climate will continue to be impacted as long as we continue to burn fuels for energy; and the severity of the changes will only increase the longer that we rely on fossil fuels.

Our energy systems also contribute to the degradation of the world's ecosystems. Energy production requires disruptive mining and drilling, and it creates pollution (of air, soil, and water) as well as acid rain.

Fortunately, there is room for hope. Energy companies are beginning to realize that it is cheaper to increase efficiency than it is to find new coal, gas, and oil sources from which to produce energy. "Americans can still cost-effectively save half the electricity they use—

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[3] US Environmental Protection Agency. "Global Warming (What it is)." Found at the URL: http://www.epa.gov/globalwarming/kids/gw.html when accessed on April 28, 2006.

[4] Natural Resources Defense Council. "Global Warming Basics." Found at the URL: http://www.nrdc.org/globalWarming/f101.asp when accessed on April 28, 2006.

[5] Florence, Joseph. 2006. "2005 Hottest Year on Record." Found on the Earth Policy Institute website at the URL: http://www.earth-policy.org/Indicators/Temp/2006.htm when accessed on April 18, 2006.

[6] US Environmental Protection Agency. "Global Warming – Emissions." Found at the URL: http://yosemite.epa.gov/oar/globalwarming.nsf/content/emissions.html when accessed on April 28, 2006.

[7] US Environmental Protection Agency. "Global Warming – Impacts." Found at the URL: http://yosemite.epa.gov/oar/globalwarming.nsf/content/impacts.html when accessed on April 28, 2006.

[8] Union of Concerned Scientists. September 2, 2005. "Global Warming Lending Strength to Hurricanes." Found at the URL: http://www.ucsusa.org/news/press_release/page.jsp?itemID=27223663 when accessed on April 28, 2006.

even the Electric Power Research Institute (EPRI), the utilities' own think-tank, says so."[9] Innovations in technology are also helping to provide room for hope through changes both small (in better light bulb technologies) and large (in increasing renewable energy systems).

In addition, some building occupants have taken steps to reduce their energy use. In the United States, almost 2/3 of electricity use is due simply to occupying buildings, and the emissions associated with occupying buildings contribute 30% of the country's total greenhouse gas emissions.[10]

> An energy efficiency program started in 1974 by the municipal utility in Osage, Iowa, (pop. 3,500) keeps an additional $1 million a year in the local economy. This program, which relied on simple tools like caulk guns, duct tape, insulation, light bulbs, and education, has created an annual community economic stimulus equal to $1000 per household.[11]

In reducing the amount of energy used simply to live and work in a particular building lowers the amount of greenhouse gas associated with occupying this building and actually can pay for itself (in future savings from what would have been spent on energy costs), and can then begin to save money for the occupants for the rest of the life of the building.

Human Justice Issues at Stake

Heavily polluting power plants are often built in economically disadvantaged areas, sometimes under the pretext of "offering employment" to these underserved populations, but usually it is done just because they do not have the political power to stop the construction. While nominal employment gains often *do* take place, they generally are not very wide-ranging. Additionally, the direct health problems that result from these heavy polluters are concentrated nearest the plants. In effect, already marginalized populations pay the price for power plants with their very health.

Cleaner sources of energy are often more expensive than "traditional" sources. This means that individuals, communities, and even countries that are less well off economically are often denied the chance to participate in renewable energy because the start-up cost is prohibitive. The Global Village Energy Partnership (http://www.gvep.org/) is working to address this problem through various grants and partnership programs.

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[9] Rocky Mountain Institute. "Meeting Our Needs With Efficiency." Found at the URL: http://www.rmi.org/sitepages/pid318.php when accessed on April 20, 2006.

[10] Weidt Group. 2005. "Top Six Benefits of High Performance Buildings." Prepared for the Minnesota Office of Environmental Assistance. This summary brochure as well as the results of the underlying study was found online at the URL: http://www.moea.state.mn.us/greenbuilding/cost.cfm when accessed on April 5, 2006.

[11] Hubbard, Alice and Clay Fong. 1995. "Community Energy Efficiency." Excerpts from *Community Energy Workbook* found on the Rocky Mountain Institute website at the URL: http://www.rmi.org/sitepages/pid302.php when accessed on April 20, 2006.

What To Do as a Congregation

As a congregation, you can reduce your energy consumption and purchase your energy from renewable sources as well as educating members and your communities to do the same. You can use every decision and every change as an opportunity to educate members to practices for their homes.

- Look at all of the ways that you use energy in the church—heating (both the building and hot water), cooling, lighting, appliances, as well as the energy lost through cracks and low-efficiency windows—and, from this energy audit, develop a strategy to reduce your energy and to bring your energy practices in line with your ethical vision. When addressing a building's energy use, the issues fall into two broad categories; the *efficiency* of your existing systems and the *kind* of energy used (and whether it is renewable).

    - Reducing your energy use for heating provides the single most effective way to reduce your building's contribution to global environmental problems.

        - To boost the efficiency and performance of your existing heating system implement a system of regular maintenance inspections. Establish guidelines of the things to look for repairing or replacing before and during operation each heating season.
            - Clean and adjust blower components to provide proper system airflow for greater comfort levels. Airflow problems can reduce your system's efficiency by up to 15 percent.
            - Inspect filters monthly and clean or replace them as needed. Dirty filters restrict air flow so that the blower has to work harder to move the same amount of air as a clean filter. Dust may also "break-through" a dirty filter and re-enter the building, creating unwanted health problems.
            - Clean the air registers and keep them clear of obstructions. Registers obstructed by furniture, carpets or drapes cause the blower to work harder. Dirty return registers can lead to dirty air ducts and unwanted health problems, while dirty registers from the furnace indicate that dust has broken through the furnace's filter and is now in the ductwork and that the ducts and registers need cleaning.
            - Keep radiators clean and unrestricted by furniture. This allows the room's air to circulate freely through the hot radiator. Also, if you have radiator covers in place for safety and/or aesthetics, be sure that these, too, are cleaned regularly.
            - Inspect and maintain your radiators. Bleed any air trapped in hot water radiators and check for sedimentation and incorrectly operating air vents in steam heat systems. Be sure to do this in a safe manner—these systems are hot when operating. Steam systems operate with very high temperatures and high pressures.

- Regularly inspect your boiler or furnace. Oil-fired systems should be cleaned every year. Gas-fired systems should be tuned every two years while heat pumps should be checked every two or three years. A properly operating system is more efficient (lowering its cost of operation), increases its lifespan, and reduces breakdowns and repair costs. An efficient system also produces fewer pollutants since all pollutants, except carbon dioxide, are actually the result of incomplete combustion and inefficiencies in the furnace/boiler.

- For maximum efficiency, moderate your thermostat settings, lowering them in winter. For every degree Fahrenheit lowered, you can save up to 3% on your heating expenses. Set thermostats to heat no higher than 68°F when the building is occupied and down to 55°F when it is unoccupied. Programmable thermostats are available to help you automate and manage heating and cooling based upon your facility's weekly usage pattern, even down to the individual room, if desired. You can expect to recover the cost of installing such a thermostat in the first year or two. (Using the most moderate setting also allows you to maximize the amount of fresh outdoor air brought into the building, which improves indoor air quality – see our section on indoor air quality.)

- Close heating vents in unused rooms (be sure there are no water pipes nearby that may freeze and burst, especially if you have a water-based fire-suppression installed), or close down less-used portions of your building during peak heating periods. As an example, Grace Lutheran Church in Nerstrand Minnesota worships and also has its other community activities in the fellowship hall during the winter months, thus cutting back on energy consumption and saving the congregation financially as well.

- Insulate air ducts and water and steam pipes with ecologically friendly insulation to prevent heat loss. Cold water inlet pipes to hot water heaters should be wrapped for about five feet as well.

- Reduce the amount of energy used to produce hot water by establishing guidelines to:
  - Fix leaking faucets. Leaking hot water is leaking energy as well.
  - Turn down the water heater thermostat – the aquastat. You can reduce fuel consumption by five to ten percent when outdoor temperatures are milder by setting the aquastat at 120-140°F instead of 160-180°F; this can be done automatically by a modulating aquastat. When the system will not be used for long periods of time turn off the water heater, or use its lowest setting.
  - Install faucet aerators in kitchen and bathroom sinks. These reduce the flow of hot water from the taps without lowering the force of the water.
  - Only use the dishwasher when the machine has been fully loaded. When washing dishes by hand, wash and rinse in a pan, not under running water.

- Insulate the hot water tank. A few of the newest models may not benefit from this, however. Also be sure that any additional insulation does not restrict air flow to the combustion/water heating parts of the system.

◊ To reduce the amount of energy used to cool your building keep your cooling system running efficiently and look for ways to use it less often.

- To boost the efficiency and performance of your existing cooling system implement a system of regular maintenance inspections. Establish guidelines of the things to look for repairing or replacing before, and during operation, each cooling season.
  - Clean the evaporator and condenser coils. Dirty coils reduce the system's ability to provide cooling thus causing the system to run longer, which both increases energy costs and reduces the life of the equipment.
  - Check your central air conditioner's refrigerant level and adjust if necessary. Too much or too little refrigerant will make your system less efficient, thereby increasing energy costs and reducing the life of the equipment.
  - Clean and adjust blower components to provide proper system airflow for greater comfort levels. Airflow problems can reduce your system's efficiency by up to 15 percent.
  - Inspect filters monthly and clean or replace them as needed. Dirty filters restrict air flow so that the blower has to work harder to move the same amount of air as a clean filter. Dust may also "break-through" a dirty filter and re-enter the building, creating unwanted health problems.
  - Clean the air registers and keep them clear of obstructions. Registers obstructed by furniture, carpets or drapes cause the blower to work harder. Dirty return registers can lead to dirty air ducts and unwanted health problems while dirty registers from the furnace indicate that dust has broken through the furnace's filter and is now in the ductwork and that the ducts and registers need cleaning.

- For maximum efficiency moderate your thermostat settings, raising them in summer. For every degree Fahrenheit changed you can save up to 3% on your air conditioning expenses. Set thermostats to cool no lower than 72°F when the building is occupied and turn the system off when the building is unoccupied. Programmable thermostats are available to help you automate this process, and you can expect to recover the cost of installing such a thermostat in the first year or two. (Use electronic timers for window air conditioning units.) (Using the most moderate setting also allows you to maximize the amount of fresh outdoor air brought into the building, which improves indoor air quality – see our section on indoor air quality.)

- Close cooling vents in unused rooms, or close down less-used portions of your building during peak air conditioning periods. This cuts back on energy consumption, and saves the congregation financially as well.

- Insulate air ducts with ecologically friendly insulation to prevent excess cooling to unoccupied spaces.

- Minimize energy use required for cooling by using ceiling fans. With the breeze of a ceiling fan, you can set your air conditioning at 78-80°F and feel as though the thermostat was set at 72°F. And ceiling fans use very little electricity. Even at high speed, most fans only consume the same amount of electricity as a 100-watt light bulb.

- The color of your roof also affects energy use for cooling. A dark roof can get up to 180°F on a sunny, windless day. A white roof or one with a reflective coating will reflect more of the sun's heat away from the building so that it stays cooler. Flat roofs are especially good candidates for using reflective material because they cannot be seen from the ground. Light-colored roofs have an added advantage over dark roofs in that they tend to last longer. The constant heating and cooling of a roof causes it to expand and contract, causing wear and tear on the materials, which is greater for dark roofs due to the higher temperatures they achieve. Cooler roofs are generally more durable. Regardless of reflectance, material also affects how well the roof sheds heat. For instance, curved tiles and wood usually allow air to circulate, which helps to keep them cool.

◊ Lighting can account for a good deal of energy use. Incandescent bulbs waste up to 90% of their energy as heat—only 10% of the energy consumed is actually used to produce light. (Incandescent light bulbs are actually inefficient heaters that happen to give off some visible light as a by-product; there are more efficient ways to provide both light and heat than with incandescent light bulbs.) Switching away from incandescent bulbs can cut down on summer cooling costs. (Up to 20 percent of the energy used for summer cooling goes to the extra air conditioning needed to remove unwanted heat from lighting.)

- A compact fluorescent light (CFL) bulb produces light through an electrical process. The efficiency of electronics produces more light with less energy. Beyond the economic gain (up to $50 over the 10 year lifetime of one bulb), an 18-watt CFL burns 500 lbs less coal (and creates 1300 lbs less carbon dioxide—a major cause of global warming), as well as 20 lbs less sulfur dioxide (a source of acid rain) than incandescent bulbs. Additionally, your congregation may want to consider replacing older fluorescent fixtures containing high wattage ballasts with newer, lower energy use, fixtures. These, too, can provide significant energy and cost-savings.

- Replace incandescent light bulbs in Exit signs, which run continuously (8,760 hrs/yr). Look into replacing old incandescent bulb fixtures with light emitting diodes (LEDs). These can actually save you enough money in operational costs to pay for themselves in a few months.

- Do NOT use halogen bulbs. CFLs operate at less than 100°F. Halogen bulbs, often found in floor lamps or torchieres, burn at 1,000°F. Due to their high heat output, halogens can cause burns and fires. And they produce all of that waste heat during the summers. CFLs are cool to the touch.

- Fluorescent bulbs generally must be disposed of as toxic products because they contain mercury. For help in choosing CFLs with the lowest mercury content see INFORM's fact sheet at the URL: http://www.informinc.org/fact_P3fluorescentlamps.php or download the PDF version from the URL: http://www.informinc.org/fs_P3fluorescentlamps.pdf.

- Use electronic timers to save energy. They can be programmed to turn lights on and off at designated times. For exterior lights, bathrooms, and utility rooms, install motion detectors so that these areas are lit only while they are in use.

◊ Evaluate your appliances and, when possible, replace church-owned equipment with more energy-efficient models. Information on purchasing energy-efficient appliances can be found from the Federal Trade Commission's (FTC's) website at the URL: http://www.ftc.gov/bcp/conline/pubs/homes/applnces.htm, the Environmental Protection Agency (EPA)/Department of Energy (DOE) Energy Star website (URL: http://www.energystar.gov/index.cfm?c=appliances.pr_appliances), American Council for an Energy-Efficient Economy's website (URL: http://www.aceee.org/consumerguide/mostenef.htm), and the DOE's own Energy Efficiency and Renewable Energy website (URL: http://www.eere.energy.gov/consumer/your_home/water_heating/index.cfm/mytopic=12760).

- Consider purchasing high-efficiency water heaters or "instantaneous" ("tankless") models as they can reduce energy consumption up to 20%—there is no energy used to keep the water hot, as in a traditional system using a hot water tank.

- Buy an energy efficient dishwasher; this will also save on overall water use.

◊ The exterior of your building, its "envelope" or shell, consists of the insulation, outer walls, ceilings, doors, windows, and floors. These work together to control airflow in and out of the structure, repel moisture, and prevent heat from being lost or gained inside your building. To maintain maximum energy efficiency—and keep

in winter heat and summer cooling—regularly inspect your building's "envelope" for leaks and then seal any holes that you may find

- First, make a list of obvious air leaks (drafts). The potential energy savings from reducing drafts may range from 5 to 30% per year.

- Check for indoor air leaks, such as gaps along the baseboard or edge of the flooring and at junctures of the walls and ceiling. Check to see if air can flow through: electrical outlets, switch plates, window frames, baseboards, weather stripping around doors, fireplace dampers, attic hatches, wall- or window-mounted air conditioners. Also look for gaps around pipes and wires, foundation seals, and mail slots. Check to see if the caulking and weather stripping are applied properly, leaving no gaps or cracks, and are in good condition.

- Inspect windows and doors for air leaks. See if you can rattle them, since movement means possible air leaks. If you can see daylight around a door or window frame, then the door or window obviously leaks air. You can usually seal these leaks by caulking or weather stripping them. Check the storm windows to see if they fit and are not broken. You may also wish to consider replacing your old windows and doors with newer, high-performance ones. If new factory-made doors or windows are too costly, you can install low-cost plastic sheets over the windows.

- On the outside of your building, inspect all areas where two different building materials meet, including: All exterior corners, where siding and chimneys meet, and areas where the foundation and the bottom of exterior brick or siding meet.

- When sealing, you must always be aware of the danger of indoor air pollution and "backdrafts" from combustion appliances. Backdrafting is when the various combustion appliances (furnaces, stoves, and fireplaces) and the ventilation system exhaust fans compete for air. If combustion sources are not properly ventilated, an exhaust fan may pull the combustion gases that are created when these are used back into the living space. This can create a very dangerous and unhealthy situation—death through carbon monoxide poisoning is one possible consequence.

Any air sealing efforts will complement your insulation efforts, and vice versa. Proper moisture control and ventilation strategies will improve the effectiveness of air sealing and insulation, and vice versa.

- Determine if adding more insulation to parts of your building will reduce your energy consumption. Can additional, ecologically friendly, insulation in attic

floors, basements, crawl spaces, or other areas improve your building's energy efficiency?
Insulation's resistance to heat flow is indicated by its R-value. A higher R-value designates a greater insulating effectiveness. The amount of insulation (R-value) you will need depends on your climate, type of heating and cooling system, and which part of the building you plan to insulate. Upgrading the insulation in your attic to R-30 or R-38 can save as much as 25% on cooling and heating costs. Increase attic insulation to R-50 in cold climates, R-38 in milder climates, and R-30 plus a radiant barrier in hot climates.
The Department of Energy's (DOE's) "Insulation Fact Sheet" can be found at the URL: http://www.ornl.gov/sci/roofs+walls/insulation/ins_01.html.

- First identify your old insulation. If any of your old attic or crawl space insulation is vermiculite pellets it could contain asbestos. Take special precautions if you have vermiculite insulation as it may contain asbestos, a health hazard if it is inhaled. More information and photos can be found at the URL: http://www.epa.gov/asbestos/pubs/insulation.html.

- Investigate reflective insulation. Reflective insulation (also called a radiant barrier) is a metallic foil material (usually aluminum) designed to block radiant heat transfer across open spaces. According to the DOE's "Radiant Barrier Attic Fact Sheet" (http://www.ornl.gov/sci/radiant/rb_01.html), reflective insulation can be effective at reducing cooling and, possibly, heating bills. DOE also states that the performance and long-term cost-effectiveness of the radiant barriers depend on a number of factors, including where and how the product is installed and the amount of existing insulation. You can also see the Florida Solar Energy Center's "Radiant Barriers: A Question and Answer Primer" at the URL: http://www.fsec.ucf.edu/pubs/energynotes/en-15.htm.

- In addition to making sure that windows and doors are properly sealed with environmentally-friendly products, consider replacing older windows with more energy efficient ones.

◊ If your congregation wishes to decrease its environmental impact even more, renewable energy sources are also an option. With many electric utilities, the provider can ensure that the energy comes from renewable resources when the customer asks to pay for this service. (See the EPA's website at the URL: http://www.epa.gov/greenpower/locator/index.htm for the options available in your state.)

The best way to reduce energy use is to install systems that use renewable energy.

- Active (photovoltaic) solar: Most commonly known as "solar panels," this type of energy captures the power of the sun and through its photovoltaic panel of cells it transforms the sunlight into electricity. A photovoltaic system that

produces 150 kilowatt-hours of energy monthly will prevent 150 pounds of coal from being mined; prevent 300 pounds of carbon dioxide from entering the atmosphere; keep 105 gallons of water from being consumed; and keep smaller, but still important, amounts of sulfur dioxide and nitric oxide (which form acid rain and smog) from being released into the environment.[12]

- Passive solar: This approach involves designing a building, especially its windows, to utilize the sun's solar energy to provide maximum natural lighting and increased winter heating. This option would be difficult to work in on an already-existing structure, but would be a great tie-in for a new building project.

- Wind turbines: Wind power is the fastest-growing energy source in the world. Electricity is produced as the wind propels the blades on each wind turbine (a windmill). This form of energy production has zero emissions. Of course, it is necessary to have enough land available to build the turbine, and it must be located in an area with sufficient and regular wind in order to power the turbine.

- Geothermal: About 150 feet below the earth's surface the temperature remains fairly constant, ranging from 45°F in northern latitudes to about 70°F in the deep south-year round. Geothermal energy systems sink piping into the earth and fill it with water and a non-toxic antifreeze to take advantage of this phenomenon by removing the ground's heat and transferring it to the building in the winter and transferring the building's heat to the cooler ground in the summer—thus cooling the building. Geothermal systems are two to four times more efficient than a furnace. This results in a 30-70 percent savings in heating costs and 20-50 percent in savings in cooling costs compared to conventional systems.[13] Although the installation price is significantly higher than a "traditional" setup, the money saved during operation means that this difference can generally be recuperated within 5 years.

- Active solar (hot water): A solar water heater collects the sun's energy through panels containing water and antifreeze and transferring this energy to the water stored in your traditional hot water tank. By investing in one, you will be avoiding carbon dioxide, nitrogen oxides, sulfur dioxide, and the other air pollution and wastes created when your utility generates power or you burn fuel to heat your water. When a solar water heater replaces an electric water heater, the electricity displaced over 20 years represents more than 50 tons of avoided carbon dioxide emissions alone. You can expect a savings of 50-85% on your

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[12] Solar Energy International. "Energy Facts: Photovoltaics." Found at the URL: http://www.solarenergy.org/resources/energyfacts.html when accessed on April 18, 2006.

[13] Geothermal Heat Pump Consortium. "What is Geoexchange?" Found at the URL: http://www.geoexchange.org when accessed on April 18, 2006.

utility bill compared to electric water heating, and the added initial expense is generally recovered within 4-8 years.

- If your congregation decides on a building renovation, or a new structure, you can incorporate many energy-saving features. The shape of the building plays an important role in determining energy consumption (circular shapes being some of the most efficient). Large (especially south-facing) windows can help to serve as sources of passive solar energy and natural lighting (planting deciduous trees in front of these windows will allow sun in for heating during cold winter months, while the leaves on the trees during the summer will help in maintaining a cooler atmosphere). These examples are just the beginning of what "green design" can do for your building project. The U.S. Green Building Council (http://www.usgbc.org) is a great place to start for ideas and information, as is The National Environmental Education and Training Foundation website found at the URL: http://www.greenerbuildings.com, which has some information on site selection considerations.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into everyday life. You can educate yourselves and your neighbors about reducing the amount of energy that you use at home. Educating your children is one of the first steps you can take to making the world better for future generations.

- Implement the church's energy use guidelines at home. Inspect, clean, and tune-up your existing heating and cooling systems; plug air leaks and add additional environmentally-friendly insulation where appropriate; turn down and insulate (as needed) your water heater; moderate your thermostat settings; install faucet aerators; use fans instead of the air conditioner; install lightly colored roofing material and energy efficient windows; install compact fluorescent light bulbs; use timers and motion detectors to limit the amount of time that air conditioners, appliances, and lights are turned on; and purchase the most energy efficient appliances that are available.

- Install one or more renewable energy systems or purchase your energy from a renewable source.

- Wash clothes in cold water whenever possible, and do full loads of laundry. Also consider buying a tumble action (also called horizontal-axis) clothes washer; these load from the side rather than the top. They cost more, but use only two-thirds as much hot water (and detergent) as conventional washers.

Resources

Websites

- Some congregational pages to see as resources are:

- ◊ http://www.madisonchristiancommunity.org/environmentalstewardship.htm: In Madison Wisconsin Advent Lutheran, a congregation of the Evangelical Lutheran Church in America, and Community of Hope, a United Church of Christ congregation, share one building, called Madison Christian Community. The two congregations jointly installed a photovoltaic system on their roof.
- ◊ http://cbst.org/socialjustice.shtml#environment: Congregation Beth Simchat Torah. A Jewish congregation that actively encourages its members to sign-up for green energy in their homes.

- ♦ http://www.newdream.org/tttoffline/index.php: The Center for a New American Dream's "Turn the Tide" program is a nine-step program involving simple lifestyle changes that impact the environment. The fifth and sixth steps in this process are replacing four incandescent light bulbs with compact fluorescent bulbs and moving your thermostat 3°F (lower in winter and higher in summer). By signing up for this program you can calculate the amount of non-renewable resources saved and the amount of greenhouse producing emissions that you and your congregation help to prevent through these actions. This innovative web-based resource is easy to use and can really give members the sense that their actions are making a positive, measurable impact.

- ♦ http://www.theregenerationproject.org/ipl/: Interfaith Power and Light program of The Regeneration Project. An inter-religious ministry devoted to deepening the connection between ecology and faith. They promote renewable energy, energy efficiency and conservation, and have chapters throughout the U.S.

- ♦ http://www.solarenergy.org: Solar Energy International is a great resource for all things solar and more. They offer workshops and online courses in solar, wind, and water based energy systems, and they carry many books on these topics.

- ♦ http://www.eere.energy.gov: Department of Energy Office of Energy Efficiency and Renewable Energy website with references for a variety of renewable energy sources (biomass, geothermal, solar, water, wind, and others) as well as a variety of building and consumer issues and some activities for kids, teens, and families.
  - ◊ http://www.eere.energy.gov/EE/buildings.html: Energy efficient building technologies; the building envelope (insulation, windows, and doors), space heating/cooling, water heating, lighting, appliances/equipment, and more.
  - ◊ http://www.eere.energy.gov/consumer/: Consumer page with information for apartment dwellers, home design, and remodeling (passive solar design; small scale electrical systems, both photovoltaic and wind turbines; insulation issues; heating and cooling; lighting; windows and doors), appliances/electronics, and more.
  - ◊ http://www.eere.energy.gov/kids/: "Dr. E's Energy Lab" with activities for kids and families and science project ideas.

- http://www.epa.gov/greenpower/buygreenpower/index.htm: The Environmental Protection Agency's Green Power guide to buying environmentally-friendly, renewable energy.

- http://www.nrel.gov: The Department of Energy's National Renewable Energy Laboratory Homepage, with links and information on solar, wind, and geothermal energy and more.

- http://www.ftc.gov/bcp/conline/pubs/homes/applnces.htm: Federal Trade Commission's guide on "How to Buy an Energy-Efficient Home Appliance" has general information about shopping for an energy-efficient appliance.

- http://www.aceee.org/consumerguide/mostenef.htm: American Council for an Energy-Efficient Economy's list of recommended products, including refrigerators and freezers, dishwashers, clothes washers, air conditioners, and heat pumps as well as tips on how to choose stoves and ranges, water heaters, lighting, heating systems, and windows. This is available in print form as well (see books below.)

- http://www.efficientwindows.org: The Efficient Windows Collaborative provides information on window technology and energy efficiency, as well as a calculator for estimating potential savings.

- http://www.energystar.gov: The USEPA and USDOE Energy Star program offering product and building improvement advice for improving energy efficiency including:
  - http://www.energystar.gov/index.cfm?c=appliances.pr_appliances: appliances (battery chargers, clothes washers, dehumidifiers, dishwashers, refrigerators and freezers, room air conditioners, room air cleaners, and water coolers)
  - http://www.energystar.gov/index.cfm?c=heat_cool.pr_hvac: heating and cooling systems (air conditioning, boilers, dehumidifiers, fans, furnaces, geothermal systems, heat pumps, insulation, and programmable thermostats).
  - the home envelope
    - http://www.energystar.gov/index.cfm?c=home_sealing.hm_improvement_sealing: home sealing (insulation and air sealing)
    - http://www.energystar.gov/index.cfm?c=roof_prods.pr_roof_products: roof products
    - http://www.energystar.gov/index.cfm?c=windows_doors.pr_windows: windows, doors, and skylights
  - http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductCategory&pcw_code=HEF: home electronics (battery chargers, cordless phones, TVs/VCRs/DVDs)
  - http://www.energystar.gov/index.cfm?fuseaction=find_a_product.showProductCategory&pcw_code=OEF: office equipment (computers and more)
  - http://www.energystar.gov/index.cfm?c=lighting.pr_lighting: lighting

- http://www.geoexchange.org: Geothermal Heat Pump Consortium has details on geothermal heating.

- http://www.usgbc.org: The US Green Building Council and its LEED (Leadership in Energy and Environmental Design) green building certification system.

- http://www.focusonenergy.com: Focus on Energy is a public-private partnership offering energy information and services to utility customers in Wisconsin.

- http://www.moea.state.mn.us: Minnesota Office of Environmental Assistance (MOEA) provides resources for businesses, schools, local governments, and others on environmental building issues, recycling, and renewable energy. In the future you may need to access this information through the Minnesota Pollution Control Agency (MPCA) website since MOEA was combined with MPCA in 2005 (see http://www.pca.state.mn.us).

- http://www.realgoods.com/renew/index.cfm: Gaiam.com Inc.'s "Real Goods" website solar, wind, and hydro section—check out these suppliers and put together your own system.

- http://www.homeenergy.org *Home Energy* magazine's online edition.

Books

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Mumma, Tracy. 1997. *Guide to Resource Efficient Church Buildings*. Missoula, MT: The Center for Resourceful Building Technology.

Pahl, Greg. 2003. *Natural Home Heating: The Complete Guide to Renewable Energy Options*. White River Junction, VT: Chelsea Green.

Potts, Michael. 1993. *The New Independent Home: People and Houses that Harvest the Sun, Wind, and Water*. White River Junction, VT: Chelsea Green.

Wilson, Alex, Jennifer Thorne, and John Morrill. 2003. *Consumer Guide to Home Energy Savings: All New Listings of the Most Efficient Products You Can Buy*, 8th ed. Washington, DC: American Council for an Energy-Efficient Economy. An on-line condensed version can be found at the URL: http://www.aceee.org/consumerguide/mostenef.htm.

Activities

In addition to offering a way to raise the capital needed for environmentally-friendly improvements, fund raisers provide ways of increasing public awareness of environmental issues. For instance, your congregation might choose to sell compact fluorescent bulbs. In doing so, perhaps you get the bulbs for $1 each and sell them for $3 each. That $2 profit could then go towards retrofitting the church, or, if you so chose, a dollar of it might go into a fund for helping the community become more environmentally-friendly. This might be done in connection with Season of Creation worship materials (http://www.seasonofcreation.com), as part of the "Change a Light, Change the World" campaign that takes place each year in October and November (http://www.mwalliance.org/consumers/), or perhaps as part of a local, community organized drive. Perhaps the sale could be connected with epiphany, and the light the three magi followed across the sky. The theological and spiritual implications are endless. The "Youth CFL Project" is one such option. It is a program sponsored by the National Council of Churches of Christ Eco-Justice Working Group and is administered by Brethren Press. Their website is found at http://www.brethren.org/genbd/BP/CFL/index.htm.

Even more far-reaching, your church might consider ways to commit to larger social causes, whether by making energy-efficient light bulbs available to low-income families, who might not normally be able to afford the initial cost of these higher priced items, or even by joining a partnership of some sort.[14] Besides offering greater accountability, such partnerships allow exchange of ideas, as well as a larger sense of community.

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[14] On a small scale, this might be with another local congregation, or a group of organizations in the area, such as Congregations Caring for Creation in Minnesota (http://www.c3mn.net) or your local Interfaith

Bulletin/Newsletter Green Notes

- One powerful example of a success, according to the Energy Star website, http://www.energystar.gov/index.cfm?c=small_business.sb_congregations_snapshots, is Bethesda Lutheran Church of Ames, IA. Their lighting was changed to CFL; installed computer controls to heat and cool only those rooms that were occupied; purchased new energy efficient freezers; and installed new storm windows over the stained-glass windows. All of this has resulted in a reduction in the consumption of 21,740 kWh—representing the prevention of about 100,286 pounds of carbon dioxide emissions—each year! Additionally, the congregation is saving about $5,000 annually.

- According to Solar Energy International, http://www.solarenergy.org, the wind in North Dakota alone could provide about 1/3 of all U.S. electricity. Additionally, about 20% of U.S. energy demand could be provided at an *economical* price by wind power.

- The following facts were compiled by Solar Energy International:[15]

  - By taking appropriate energy-saving measures, by 2010, the United States can have an energy system that reduces costs by $530 per household per year and reduces global warming pollutant emissions to 10 percent below 1990 levels. (*Energy Innovations report*) [Note that the Kyoto treaty only requires a 7 percent reduction of emissions.]

  - Just by using the "off the shelf" energy-efficient technologies available today, we could cut the cost of heating, cooling, and lighting our homes and workplaces by up to 80%. (*U.S. Department of Energy and Maryland Energy Administration*)

  - A decrease of only 1% in industrial energy use would save the equivalent of about 55 million barrels of oil per year, worth about $1 billion.

Power and Light affiliate which can be found at http://www.theregenerationproject.org/ipl/. On a larger scale, a group such as the Global Village Energy Partnership (http://www.gvep.org) might be appealing.

[15] Solar Energy International. "Energy Facts." Found at the URL: http://www.solarenergy.org/resources/energyfacts.html when accessed on April 18, 2006.

Section 4: Environmental Impacts of Paper and Wood Products

Then God said, 'Let the earth put forth vegetation: plants yielding seed, and fruit trees of every kind on earth that bear fruit with the seed in it.' And it was so. The earth brought forth vegetation: plants yielding seed of every kind, and trees of every kind bearing fruit with the seed in it. And God saw that it was good. And there was evening and there was morning, the third day. (Genesis 1:11-12)

Say among the nations, 'The Lord is king!
    The world is firmly established; it shall never be moved.
    He will judge the peoples with equity.'
Let the heavens be glad, and let the earth
    let the sea roar, and all that fills it;
    let the field exult, and everything in it.
Then shall all the trees of the forest sing for joy
    before the Lord; for he is coming,
    for he is coming to judge the earth.
He will judge the world with righteousness,
    and the peoples with his truth. (Psalm 96:10-13)

Sing, O heavens, for the Lord has done it;
    shout, O depths of the earth;
break forth into singing, O mountains,
    O forest, and every tree in it!
For the Lord has redeemed Jacob,
    and will be glorified in Israel. (Isaiah 44:23)

Then the angel showed me the river of the water of life, bright as crystal, flowing from the throne of God and of the Lamb through the middle of the street of the city. On either side of the river is the tree of life with its twelve kinds of fruit, producing its fruit each month; and the leaves of the tree are for the healing of the nations. (Revelation 22:1-2)

Theological Reflections

The Christian community is committed to the renewal and care of all of God's creation and longs for the day when all creation will cry out with praise for God our creator. Now, however, the cries of the environment are not cries of praise, they are cries of anguish as we continue to live as a people who ignore and pollute our universe. Trees, a symbol of life, are being clear-cut and consumed at a rate that forests cannot support. Christians cannot claim to respect creation and ignore the needs of forests.

The Ecological Problem

Over the last twenty years alone, 300 million hectares of forests have been cleared. Currently we have only half of the forests that existed when agriculture began 11,000 years ago![16] In the US, each citizen uses an average of 730 pounds of paper each year.[17] Making paper requires the consumption of tremendous amounts of energy (680 gallons of oil and 10,601 kilowatt hours of electricity to make one ton of paper)[18] and spews chemicals into our water and air. One way to mitigate these effects is to use recycled paper. Ton-for-ton, recycled paper produces 35 percent less water pollution, 74 percent less air pollution, and uses 60-70 percent less energy than virgin, un-recycled paper.[19]

Human Justice Issues at Stake

The loss of forests has dire consequences for our world. Trees counter-act global warming, absorbing CO_2 from the air and producing oxygen. Forests also have a significant impact on the ecosystem, protecting soil from erosion and preserving the habitat of many plants and creatures. Logging and clearing of forests is the single greatest cause of species extinction worldwide.[20] The people most affected by the clearing of forests are not those consuming its goods at incredible rates. "In the Philippines, forest loss from tree felling and conversion to agriculture causes flooding, acute water shortages, rapid soil erosion, river siltation, and mudslides that have taken lives, destroyed properties, and created extensive environmental damage."[21] Even if we do not experience these effects in our own neighborhoods, we cannot ignore the plight of our brothers and sisters in the third world. Are our paper and wood products worth this kind of price?

What To Do as a Congregation

As a congregation, you can reuse and reduce your paper consumption and educate members and your communities to take part in these programs. You can use every decision and every change as an opportunity to educate members to practices for their homes.

- You can set guidelines for appropriate paper use in the congregation. Such guidelines are an integral part of adopting best office practices. For example, committing

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[16] Larsen, Janet. 2002. "Forest Cover Shrinking." Found on the Earth Policy Institute website at the URL: http://www.earth-policy.org/Indicators?indicator4.htm when accessed on March 20, 2006.

[17] The Center for a New American Dream. "Environmentally Preferable Paper. Overview." Found at the URL: http://www.newdream.org/procure/products/paper.php when accessed on March 21, 2006.

[18] The Center for a New American Dream. "Environmentally Preferable Paper. Environmental and Human Health Impacts." Found at the URL: http://www.newdream.org/procure/products/paperimpact.php when accessed on March 21, 2006.

[19] The Center for a New American Dream. "Environmentally Preferable Paper. How to Buy Better Paper." Found at the URL: http://www.newdream.org/procure/products/paperbuy.php when accessed on March 21, 2006.

[20] Union of Concerned Scientist. http://www.ucsusa.org/global_environment/biodiversity/index.cfm.

[21] Union of Concerned Scientist. http://www.ucsusa.org/global_environment/biodiversity/index.cfm.

yourselves to using both sides of paper, to making recycling stations available in all areas of the church (including classrooms), to shredding and recycling your classified documents, and refraining from the use of brightly colored paper (which is more toxic due to the pigments added to them). Post these guidelines above copy machines, in general office areas, in classrooms, and make sure they are part of the training manual for new office staff. Some ways for reducing the amount of paper used for printing from the computer, especially for draft documents include:

- ◊ Change top, bottom, and side margins to 0.9 inch from 1 inch. This increases the printable area per page and the document becomes about 10% shorter.
- ◊ Reduce the default font size from 12 points to 11.5. This increases the number of lines on each page and reduces paper use by about 5%.
- ◊ The line spacing is single spacing by default. Reducing it to the multiple of 0.95. You gain an extra line every 20 lines and make your document 5% shorter.

(Taken together these actions save almost 20% on paper use!)

- ◊ In preparing these guidelines you need to make yourselves aware of the differences between "regular" products, those that appear to be environmentally-friendly—those that "green-wash" themselves—and the most environmentally-friendly products available. Products which are certified by independent organizations, like Green Seal in the US and Environmental Choice in Canada, are more environmentally-friendly than other products. However, not all environmental certification systems are as robust as others. Some products "certified" as environmentally-friendly are processed not much differently from uncertified products. And the general consensus among environmental organizations is that the certification system for paper products offered by the Forest Stewardship Council (FSC) is stronger than the certification for paper products offered by Green Seal or any other certification system.

♦ You can make a commitment to use recycled paper. You can purchase paper that is made from at least 60% post-consumer waste, and you can use chlorine free copy paper for your fax and copy machines**.** And you can print your weekly bulletins, newsletters, and other mailings on recycled paper. You can make use of recycled paper in your envelopes. **"**Paper products are bleached to make them whiter and brighter, but chlorine used in many bleaching processes contributes to the formation of harmful chemicals that wind up in our air and water and are highly toxic to people and fish. Look for products labeled totally chlorine-free (TCF) or processed chlorine-free (PCF). In some cases, elemental chlorine-free (ECF) may be acceptable."[22]

- ◊ TCF paper is un-recycled paper that has been bleached without chlorine compounds; typically, oxygen, ozone, or hydrogen peroxide is used instead.

[22] Nation Resources Defense Council. October 26, 2005. "A Shopper's Guide to Home Tissue Products. Shop smart. Save forests." Found at the URL: http://www.nrdc.org/land/forests/gtissue.asp when accessed on March 20, 2006.

- ◊ PCF applies to recycled paper where no chlorine compounds have been used in the recycling process. (The original paper may or may not have been bleached with chlorine.) PCF products combine the benefits of recycling and oxygen-based bleaching.
- ◊ ECF is a wood industry term for pulp bleached without "elemental" chlorine gas. However, other chlorine compounds, typically chlorine dioxide, are used to bleach the pulp. While toxic chlorine by-products are reduced by ECF, they are not eliminated.[23]

You can encourage your local office supply store to stock chlorine free paper so the congregation and individual parishioners can purchase it.

- Also you can look for paper that has been endorsed by the Forest Stewardship Council (FSC) (http://www.fscus.org/paper/). This is the only organization to guarantee that the paper purchased is made in the most ecologically responsible manner. It has readily accessible performance-based standards that are not unduly influenced by forestry companies. Inspections and reporting for FSC certification requires the maintenance of forest integrity for conservation purposes and prevents the clearing of forests to introduce plantations or genetically modified crops in their place as well as monitoring the rights of indigenous people and forestry workers.[24] Beyond recycled paper there are additional options, including hemp and kenaf paper, though the monetary costs may be higher for your congregations. In addition, it is often possible to find paper that is grown on tree farms, though without the certification of the FSC this paper cannot be assured to be ecologically friendly. (Since only about one-quarter of the certified forests are covered by FSC,[25] there are instances where land is clear-cut to support a tree farm, but destroys forest integrity.) You can seek out FSC certified paper at your local supplier; Kinko's is one of the national chains that carries this paper.

- You can use recycled paper products for church bathrooms and kitchens. These products are growing in popularity and can be purchased through your local supplier. Some companies and types of products are better than others. Two sources of high-recycled content paper products are Seventh Generation (its local distributors and online ordering can be found at the URL: http://www.seventhgeneration.com) and Earth First (available at Safeway). Others may be found at the National Resources Defense Council website (http://www.nrdc.org/land/forests/gtissue.asp). Options that are even more tree-friendly include installing air dryers in the bathrooms in place of

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[23] Reach for Unbleached Foundation. "FAQs: Explain this Alphabet Soup of TCF, PCF and ECF." Found at the URL: http://www.rfu.org/cp/faqsonpaper.html when accessed on March 20, 2006.

[24] FERN. 2004. *Footprints in the Forest: Current Practice and Future Challenges in Forest Certification*. Moreton in Marsh, Gloucestershire: FERN. p. 21. (One website to locate this document is the URL: http://www.dontbuysfi.com.)

[25] FERN. 2004. *Footprints in the Forest: Current Practice and Future Challenges in Forest Certification*. Moreton in Marsh, Gloucestershire: FERN. p. 29.

paper towel dispensers and using cloth napkins, ceramic plates, and ceramic cups in place of paper products at community meals and coffee hours.

- You can explore using electronic means for worship, which reduces the amount of paper used in your worship bulletins. When possible, newsletters and other communications can happen electronically.

- You can commit yourselves to using wood products that are certified by the Forest Stewardship Council (FSC) (http://www.fscus.org). This group certifies wood as being ecologically sound and is logged in environmentally sound ways. Wood that is used in building projects plays a significant role in the reduction of forests. When considering a building project, consult with a "green architect" to consider environmentally sound ways of building, including selecting materials with the lowest environmental impact. Wood that has been certified by the FSC is available at most stores, including the national chains of Lowe's and The Home Depot. Architects, specifiers, and builders can identify other suppliers for projects in their part of the country through the form found on the FSC website at the URL: http://www.fscus.org/faqs/fsc_products.php.

- In consideration of all of the trees that are cut down to supply your congregation with paper and wood, you can plant trees on the church property and organize tree planting days in local parks, on members' property, and, in cooperation with local officials, along city streets.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into everyday life. You can educate yourselves and your neighbors about using recycled paper and certified wood products in your homes, especially when building and making improvements. You can also commit yourselves to recycling your junk mail, and reducing your use of paper at home and at work. Educating your children about recycling, and encouraging them to learn more about local recycling is one of the first steps you can take to making the world better for future generations.

- You can reduce your junk mail. Junk mail is one of the leading contributors to the over-consumption of paper. It takes 340,000 garbage trucks to haul all of the un-recycled junk mail to US landfills and incinerators every year![26] To remove yourself from some general junk mail lists you can find a simple form to fill in, print out, and mail at the Center for a New American Dream website junk mail page, found at http://www.newdream.org/junkmail/index.php. Encourage friends and neighbors to remove themselves from these lists.

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[26] The Center for a New American Dream. "Just the Facts." Found at the URL: http://www.newdream.org/Junkmail/facts.php when accessed on March 20, 2006.

- Implementing many of your congregation's environmentally-friendly practices at home is not difficult. You can use the guidelines for paper use in the office, kitchen, and bath in your home. You can commit to recycling, to the use of non-toxic recycled paper, to reusing paper, and using both sides of a page. You can use toilet paper from recycled sources and cloth napkins, towels, and handkerchiefs in place of their paper counterparts.

Resources

Websites

Paper

- http://www.newdream.org/tttoffline/index.php: The Center for a New American Dream's "Turn the Tide" program is a nine-step program involving simple lifestyle changes that impact the environment. The fourth step in this process is eliminating junk mail. By signing up for this program you can calculate the number of trees that do not have to be cut down and the amount of process water saved and the amount of greenhouse producing emissions that you and your congregation help to prevent by not receiving junk mail. This innovative web-based resource is easy to use and can really give members the sense that their actions are making a positive, measurable impact.

- http://www.conservatree.com/: The Tides Center Conservatree project provides information on alternative papers, including a North American database on mills producing book and magazine grade papers with recycled content. They also have a page for helping people in buying environmentally-friendly papers in small quantities found at the URL: http://www.conservatree.org/paper/Choose/SmallQuan.shtml.

- http://www.rethinkpaper.org/: ReThink Paper works to reconnect people with the source of their disposable paper. They provide strategies for both lowering the consumption of paper and increasing the diversity of non-wood fiber in paper pulp so that forests are not over-cut due to humanity's use of paper.

- http://www.ofee.gov/recycled/cal-index.html: Office of the Federal Environmental Executive paper calculator for determining the energy saved, atmospheric and waterborne waste reductions, and wood saved by increasing the amount of recycled material in the paper you use. Because this was designed to meet the needs of U.S. government offices, it is designed for "tons" of paper used—to use this on the home level, put the number of "pounds" of paper used at home, in place of the "tons" input and then divide all of the resulting numbers from the paper calculator by 2,000 to see how much is saved by making these paper changes at home.

- http://www.chlorinefreeproducts.org: The Chlorine Free Products Association (CFPA) is a trade organization promoting total chlorine free policies, programs, and technologies and endorsing products as being total chlorine-free and process chlorine-free. A list of products that have been endorsed by CFPA can be found at the URL:

http://www.chlorinefreeproducts.org/endorsed.htm. (However, not every CFPA product comes from a FSC certified forest—see www.fscus.org below.)

Paper/Wood

- http://www.certifiedwood.org: Forest Certification Resource Center allows you to search for certified products or the forests that they come from.

- http://www.fscus.org: The Forest Stewardship Council (FSC) is the only group to certify ecologically sound wood. At this site you can search for businesses in your area that sell wood with their stamp of approval, as well as search for paper merchants that sell certified paper. In addition, this site provides practical advice for engaging in green building projects.

- http://www.coopamerica.org/programs/woodwise/whatyoucando/index.cfm: Co-op America's wood wise program for helping to make smart choices concerning wood consumption. This includes a purchasing guide to companies screened by Co-op America and found in their *National Green Pages*.

Forest Issues

- http://www.globalforestwatch.org: Global Forest Watch of the World Resources Institute (WRI) provides up-to-date statistics concerning forests worldwide, including interactive maps and other resources. Additional information can be found at the WRI website at the URL: http://forests.wri.org/index.cfm.

- http://www.treesftf.org: Trees for the Future allows you to identify and take part in tree planting projects and find information concerning tree planting in many parts of our globe.

- http://www.ourforests.org: The Heritage Forests Campaign site provides a wealth of information concerning America's national forests and wilderness areas, as well as practical ways to get involved in saving our country's forests.

Activities

- Consider having a wrapping paper party in your congregation. Gather everyday materials—paper bags, old magazines, newspapers, and other reusable materials for members to wrap Christmas and holiday gifts. Ask each person to bring something reusable and make a donation to support care for creation.

- Adopt a forest or a parcel of forest near the church or in your county. Post pictures of the forest around the congregation and think creatively of ways for the congregation to experience your adopted forest. Could you worship there together? Could you take a day retreat to reconnect with nature? How might this lead you to protect this forest area from development?

- Visit a local nursery and ask for a donation or a low-cost price for seedlings. Consider selling these seedlings to congregation members for their own use and using the profits to benefit a care for creation project.

- Adopt a tree for worship! Does your sanctuary need to become green? Ask congregation members to adopt a tree for worship by contributing to the greening of the sanctuary. What could be a better way to bring creation into our worship space?

- The options are endless! Think creatively and explore ways in your community to create projects to support the forests of the world.

Bulletin/Newsletter Green Notes

In each bulletin or newsletter, make a clear statement of your congregation's commitment to using recycled paper and certified wood products. Keep track of the amount of paper that has been recycled in the congregation, and post the weight of the paper in the bulletin or newsletter. Consider posting in your newsletter ideas for the reuse/recycling of materials.

Section 5: Environmental Impacts of Water Use

And God said, “Let there be a dome in the midst of the waters, and let it separate the waters from the waters.” So God made the dome and separated the waters that were under the dome from the waters that were above the dome. And it was so. God called the dome Sky. And there was evening and there was morning, the second day.
And God said, “Let the waters under the sky be gathered together into one place, and let the dry land appear.” And it was so. God called the dry land Earth, and the waters that were gathered together he called Seas. And God saw that it was good. (Genesis 1:6-10)

Then the angel showed me the river of the water of life, bright as crystal, flowing from the throne of God and of the Lamb through the middle of the street of the city. On either side of the river is the tree of life with its twelve kinds of fruit, producing its fruit each month; and the leaves of the tree are for the healing of the nations. Nothing accursed will be found there any more. But the throne of God and of the Lamb will be in it, and his servants will worship him; they will see his face, and his name will be on their foreheads. And there will be no more night; they need no light of lamp or sun, for the Lord God will be their light, and they will reign forever and ever. (Revelation 22:1-5)

The earth is the Lord’s and all that is in it,
    the world, and those who live in it;
for he has founded it on the seas,
    and established it on the rivers. (Psalm 24:1-2)

You make springs gush forth in the valleys;
    they flow between the hills,
giving drink to every wild animal;
    the wild asses quench their thirst.
By the streams the birds of the air have their habitation;
    they sing among the branches.
From your lofty abode you water the mountains;
    the earth is satisfied with the fruit of your work. (Psalm 104:10-13)

Then Jesus came from Galilee to John at the Jordan, to be baptized by him. John would have prevented him, saying, “I need to be baptized by you, and do you come to me?” But Jesus answered him, “Let it be so now; for it is proper for us in this way to fulfill all righteousness.” Then he consented. And when Jesus had been baptized, just as he came up from the water, suddenly the heavens were opened to him and he saw the Spirit of God descending like a dove and alighting on him. … And Jesus came and said to them, “All authority in heaven and on earth has been given to me. Go therefore and make disciples of all nations, baptizing them in the name of the Father and of the Son and of the Holy Spirit.” (Matthew 3:13-16; 28:18-19)

“I establish my covenant with you, that never again shall all flesh be cut off by the waters of a flood, and never again shall there be a flood to destroy the earth.” (Genesis 9:11)

Theological Reflections

The importance of water in our life as human beings and as Christians cannot be exaggerated. As part of creation in Genesis 1, water is deemed good by God. Water is repeatedly mentioned in the Bible. The NRSV refers to river(s) in 133 verses, stream(s) in 50 verses, and water(s) in 599 verses. These words are found in an additional 131 verses of the apocrypha. Specific rivers (Jordan, Nile, Tigris) and bodies of water (Sea of Galilee, pool of Siloam) are referred to in many more verses. Water is a gift from God that sustains life. God created water to quench our thirst, clean our bodies, and provide nourishment for plants and animals.

Water is not only vital to our physical existence as beings created by God, it is also vital to our spiritual lives. Through baptismal water we share in the life, death, and resurrection of Jesus Christ. In the waters of baptism we are reminded of the covenantal promise with Noah after the flood. Baptism is a tangible sign of God's love for us, and for all creation. God's love for us mirrors the love we are to have for our neighbors and for creation.

How we interact with water parallels our relationship with God. Chemicals and silt in water contaminate our rivers, lakes, and oceans, just as sin and brokenness pollute and cloud our lives. Water can be extremely-life giving when we use it for drinking and for watering plants and crops. It can also be dangerous when we contaminate our drinking water or create acid rain. Just as we as Christians are both saint and sinner, water can be helpful or hurtful. We are called as Christians into careful stewardship of our water resources. As congregations and as individuals, our actions in regard to water use are public statements about our understanding of God and our baptismal callings.

The Ecological Problem

A clean sustainable supply of water is vital for life to exist. On our watery planet, most of the water, 97.5 percent, is salt water and unfit for human use. Most of the world's fresh water is frozen in the ice caps and glaciers. Of all the water in the world, only 0.3 percent is available for human consumption.[27]

Water functions in a cycle—it falls as precipitation; water lands on the ground and is used by plants and animals; it seeps into the ground; or flows into rivers and streams; eventually it evaporates and the cycle starts again. The events in this system are all interconnected.

Rain and snow fall on the city and soon the clouds give way to clear skies. Clear skies but polluted water. Trash, sediment, yard debris, vehicle fluids, pet waste, fertilizers and pesticides, and even dust blown by the wind from elsewhere have been picked up by the precipitation runoff and are transported to local streams, creeks, and groundwater. This pollution comes from industrial, agricultural, and household wastes that have leached into the water. In fact, most water pollution comes from polluted runoff, not from wastewater

[27] United States Environmental Protection Agency. "Water Efficiency." Found at the URL: http://www.epa.gov/owm/water-efficiency/ when accessed on April 21, 2006.

discharge pipes. For example, mercury from a thermometer discarded in a landfill can seep into the groundwater and surface water system, poisoning fish downstream. Lawn and agricultural chemicals and other debris in water runoff lead to high levels of bacteria, nutrients, excessive sediment, and toxic material in our water. (Think of how slick and oily streets become after a little rain after a long period without rain. The rain picks up the vehicle exhaust residue that has settled on the street and gets an oily sheen. Once washed off the street this runoff ends up in our lakes and streams and can seep into groundwater.)

Urbanization increases the amount of water runoff from streets and buildings that flows into rivers and streams. This increases the possibility of flooding in urban areas as well as areas downstream from them.

We have also disrupted the interconnected systems that help buffer and treat the water naturally. Wetlands are drying up. In the lower 48 states, 53 percent of wetlands have been lost in the last 200 years.[28] Wetlands serve important ecological functions. They filter harmful chemicals, prevent flooding by storing water, and provide wildlife habitat. Water use is also affected by the building of dams. More than 45,000 large dams now exist worldwide. These dams impact the natural water flow, contributing to species and habitat loss by deterring fish migration and altering water temperature and nutrient and sediment transport.[29] In creating channels to "reclaim" land we have created fast moving streams. Streams that quickly transport pollution into our water reservoirs.

In addition, inefficient water use by humanity threatens the world's water future. Overuse of water may permanently lower water tables in many parts of the world.

Human Justice Issues at Stake

The amount of water on earth is finite. There are two separate issues occurring: the world is using water faster than it is replaced by rain and snow, and the water we do have is becoming polluted. There is a coming world-wide shortage of water as well as a serious issue of clean water distribution.

Water truly is necessary for survival, and human interaction with the environment is impacting the ability that people have to obtain quality water. It takes 2.5 billion gallons of clean, potable water to support 4.7 million people, calculated at the minimum water use requirement recognized by the United Nations. However, this same amount—2.5 billion gallons per day—is the amount of water used to irrigate the world's golf courses.[30] Water

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[28] Worldwatch Institute. "Vital Signs Fact: Wetlands Disappearing." Found at the URL: http://www.worldwatch.org/features/vsow/2005/06/07/ when accessed on April 21, 2006.

[29] Worldwatch Institute. "From Drinking Water To Disasters, Investing In Freshwater Ecosystems Is Best Insurance Policy: Waste Reduction and Conservation Increase Cost Efficiency of Nature's 'Factories'." Found at the URL: http://www.worldwatch.org/press/news/2005/07/11/ when accessed on April 21, 2006.

[30] Worldwatch Institute. "Matters of Scale: March/ April 2004: Planet Golf." Found at the URL: http://www.worldwatch.org/pubs/mag/2004/172/mos/ when accessed on April 21, 2006.

is a resource that people in privileged positions find so easy to take for granted. People who are poor cannot afford filtering water pitchers, faucet filters or filters for appliance and building water supply lines; nor can they afford bottled water. They need access to clean drinking water. Recent droughts, hurricanes, tsunamis, and floods have demonstrated that people in the lowest socio-economic classes are most vulnerable to interruptions in the clean water supply.

In our use of bottled water we come to a dilemma. In some ways, it makes sense to drink bottled water because it appears to be safer in terms of additives and contaminates. On the other hand, some bottled waters come from municipal water supplies anyway and there is the possibility that plasticizers may leach from the disposable plastic containers into the water. Purchasing water in disposable containers also produces solid waste that will end up in a landfill if it is not recycled. Also, using commercially produced bottled water implies that clean, potable water is a commodity to be sold, rather than a universal human right.

What To Do as a Congregation

As a congregation, you can reduce your water consumption as well as educating members and your communities to do the same. You can use every decision and every change as an opportunity to educate members to practices for their homes. One place to look for educational resources is the US EPA's Office of Wetland, Oceans, and Watersheds' "Polluted Runoff (Nonpoint Source Pollution)" web page found at the URL: http://www.epa.gov/OWOW/NPS/. It has interactive resources for teaching kids and includes some case studies of what works successfully.

Look at all of the ways that you use water in the church and develop a strategy for reducing your water use to make it conform to your ethical vision.

Indoors

Kitchens

- Check the plumbing for leaky faucets and pipes and repair immediately. (This also saves energy if hot water is leaking.)
- Use the dishwasher only when there is a full load. (Again, this also saves energy.)
- Avoid putting grease and strong chemicals down the drain. (These can impact the effectiveness of wastewater treatment plants.)
- Use phosphate-free dishwashing detergents and other environmentally-friendly cleaning products. (These usually end up contaminating wastewater.)
- Limit the use of garbage disposals as this can lower the oxygen levels in treated wastewater, adversely affecting fish near discharge pipes. Compost food waste instead.
- Do not let faucets run when doing other tasks.

Bathrooms

- Remove automatic flush systems that operate regardless of use. Replace these with photo-sensor/use-based automatic flush systems on toilets and automatic hand/motion sensors on faucets.
- Install low-flush toilets.
- Repair/replace leaking toilet valves.
- Place plastic bottles or low-flush devices in existing toilet tanks.
- Install low-flow (aerator) faucets.
- Insulate hot water pipes so hot water will reach the tap faster. (This also saves energy.)
- If your congregation has showers for those who may bike to church, make sure they have low-flow showerheads (aerators). Also, on/off levers at the showerhead can further save on consumption.
- Consider composting toilets for future building projects. "Composting toilets are far from being pit toilets! They range from simple twin chamber designs through to advanced systems with rotating tynes, temperature and moisture probes and electronic control systems."[31] (See the Composting World website at the URL: http://www.compostingtoilet.org.)

Fountains

- Eliminate constantly running drinking fountains. Repair leaking fountains.

Outdoors

Landscaping

- Consider landscaping that requires no, or relatively little, watering—xeriscaping. Use plants that are appropriate to the climate.
- Seed or sod with native, mixed grasses that require little maintenance or watering. This is especially helpful when dealing with large planted areas—some congregations even have their own small forested area. (See the book *The Lord's House* by Frederick Krueger – Macalester Park 1995. Some helpful websites, especially for congregations located in the Upper Midwest, can be found at the URLs: http://www.prairieresto.com/guidelines.htm, guidelines for establishing a prairie provided by Prairie Restorations, Inc.; http://www.dnr.state.wi.us/org/caer/ce/eek/nature/habitat/whatprai.htm, the Wisconsin Department of Natural Resources' Environmental Education for Kids description of "What is a Prairie?"; and http://www.dnr.wi.gov/org/land/er/invasive/info/nurseries.htm, a list of nurseries and restoration consultants who deal with seed or plants native to Wisconsin or the Midwest compiled by the Wisconsin Department of Natural Resources' Bureau of Endangered Resources.)

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[31] Composting Toilet World. "Compost Toilets Explained: An Introduction." Found at the URL: http://compostingtoilet.org/compost_toilets_explained/index.php when accessed on April 21, 2006.

- Avoid areas of bare soil. Dirt not covered by plants or grass can more easily flow into streams, leading to soil erosion and water pollution.
- Landscape to encourage water to run into the ground rather than onto neighboring sidewalks, driveways, and streets. (A below-ground cistern can be installed from which rainwater can be pumped to water the lawn.)
- Mulch all planted areas—bases of trees and shrubs, gardens, flower beds, etc.—in order to allow for better water absorption, lower evaporation, and to help prevent erosion from runoff. You can use grass clippings, leaves or any other vegetative material, and this will have the added benefit of being self-composting, eventually turning into an organic fertilizer for the plants!
- Use a mulching lawnmower and leave lawn clippings on the grass. The organic material in the clippings will provide nutrients for the lawn, reduce the chance for soil loss, and decrease the volume of lawn waste in the landfill.
- If you have a roof without a gutter, plant grass or spread mulch or gravel under the drip line to increase the capacity of the ground to absorb water and prevent soil erosion.
- Avoid pesticides and herbicides on lawn because these chemicals can seep into the groundwater system or run off into streams and rivers during heavy rains.
- Install a rooftop garden, particularly on flat roofs. Putting plants on the roof reduces the amount of water runoff. A rooftop garden will also reduce your cooling energy bills since the sunlight that hits the roof, instead of being transferred into the building, will be used by the plants to fuel their growth. (Before installing a garden on an existing roof, be sure that it can support the weight of the soil and plants as well as any water the containers may retain—this can be a lot of weight in one area. Design for this possibility with any new structures.)

Plant Watering

- Do not water lawns, or water lawns less often than once per week. Do not water lawns during times of drought.
- If you water, do so during dusk or dawn to reduce the amount of water that evaporates before reaching the plants. (You can use a timer to do this.)
- Collect rainwater from the roof in a rain barrel or cistern to use when watering plants, trees, and gardens and for other uses around the church grounds. There are also many commercially available options that allow for rainwater storage on a larger scale and for a wider range of uses. One such system is available from Tank Town. (You can check out their "Richards Rainwater" website for a primer, or get their "how-to" booklet or video, at the URL: http://www.rainwatercollection.com.)
- Or use downspouts to distribute roof runoff water over the lawn and gardens to increase natural irrigation. For information on rain gardens and a "how to" manual, see the Wisconsin Department of Natural Resources website at the URL: http://www.dnr.state.wi.us/org/water/wm/nps/rg/index.htm.
  [Downspouts, with or without rain barrels help to limit the amount of rainwater sent to the sewers. This is rainwater that often overtaxes the ability of the local sewage treatment plant and results in untreated sewage being flushed into rivers and lakes. The Milwaukee Metropolitan Sewerage District has a downspout disconnection program.

Their website at the URL: http://www.mmsd.com/programs/downspout_disconnection.cfm also includes links to similar programs in cities throughout the country.]

- Consider using drip irrigation systems if you have trees, shrubs, or gardens that need to be watered regularly. A good overview of commercial systems is available from Oregon State University at the URL: http://www.cropinfo.net/drip.htm. There is also a much simpler system that anyone can make on their own for watering individual trees. Cut the bottom off of an empty two-liter plastic bottle. Also create a hole in the bottle's cap the size of a small twig, or similar material, and place the twig snugly into the hole. Attach the bottle with the cap-end pointing downward to a stake (tying it with sturdy string is one method). Stake the equipment into the ground near the roots of the tree, making sure not to damage the roots. Fill the bottle with water and adjust the twig-plug so that one drop of water falls to the ground every 30 seconds or so. (As mentioned above, water at dusk or dawn to take full advantage of the water.)
- You could install a grey water system. Grey water is most any water that has been used in your congregation except for toilet wastewater and water mixed with food waste from garbage disposal systems. This water is suitable for "re-use" in many settings, especially landscape watering and irrigation. Using grey water lowers fresh water usage and lowers the use of septic systems or treatment plant facilities—extending their lifetimes. Also, less energy and fewer chemicals are used, and otherwise wasted nutrients are reclaimed. Two websites with more information on the installation of these systems can be found at the URLs: http://www.greywater.com and http://www.oasisdesign.net/greywater/index.htm.

Parking Areas

- Install a permeable surface for your parking lot and outdoor walkways. This is a lot of space that doesn't see much use—except for a few hours on Sunday mornings—so it is a good candidate for surfaces that limit the amount of water being sent to storm sewers.
- Where possible eliminate paved surfaces—on walkways use gravel or wood chips. Keep any paved areas as short and narrow as possible.

Construction Areas

- Install silt fences (hay bales will do) around areas disturbed by construction traffic to prevent soil from being washed offsite during rainstorms.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into everyday life. You can educate yourselves and your neighbors about reducing the amount of water that you use at home. Educating your children is one of the first steps you can take to making the world better for future generations.

- Implement the church's water use guidelines at home. Monitor your water use.

- ◊ Check for leaks by stopping water usage and recording the water meter level before and after. Repair leaks immediately**.** A faucet dripping one drip per minute leaks 2,777 gallons of water per year.[32]
- ◊ Install low-flow (aerator) showerheads and faucets and low-flush toilets. (Take showers instead of baths, using a low-flow showerhead. Low-flow showerheads can save up to two gallons of water per minute.[33])
- ◊ Do not run the faucet unless you are using the water—turn it off when you are brushing your teeth.
- ◊ Use the dishwasher only when it is full.
- ◊ Make sure hot water pipes are insulated; you will run the water a shorter time before it warms up (and save energy).
- ◊ Use phosphate-free detergents.
- ◊ Water indoor plants with water collected when running the faucet to get the water cool or hot.
- ◊ Compost pet wastes rather than leaving them in the ground to be picked up by storm runoff.
- ◊ Dispose of batteries and household chemicals in ways that do not put them into the water cycle; i.e. recycle batteries.
- ◊ Install a permeable driveway surface.

- ♦ Eat lower on the food chain, including foods that use less water. For example, it takes 16,000 liters of water to produce a kilogram [9320 gallons/pound] of beef, but only 3,000 liters to produce a kilogram [1750 gallons/pound] of rice, 1,350 liters for a kilogram [786 gallons/pound] of wheat, and 900 liters for a kilogram [524 gallons/pound] of corn.[34]

Resources

Websites

Some websites to help you monitor your water use.

- ♦ http://www.waterfootprint.org: UNESCO-IHE Institute for Water Education allows you to compute your water footprint—how much impact your lifestyle has on the water supply.

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[32] United States Geological Survey. ”Drip Accumulator: How much water does a leaking faucet waste?” Found at the URL: http://ga.water.usgs.gov/edu/sc4.html when accessed on April 21, 2006.

[33] San Antonio Water System. “Reduce Your Overhead (Low Flow Showerheads)” Found at the URL: http://www.saws.org/conservation/how_you_can_help/showerhead.shtml when accessed on April 21, 2006.

[34] UNESCO-IHE Institute for Water Education. “Water Footprint.” Found at the URL: http://www.waterfootprint.org/ when accessed on April 21, 2006.

- http://ga.water.usgs.gov/edu/sc4.html: United States Geological Survey's drip accumulator—see how much water leaks from those "little drips" that "aren't worth fixing."

- http://www.drought.unl.edu/dm/monitor.html: Check with the US's National Drought Mitigation Center each week to see if your region is currently at risk for drought.

- http://watermonitor.gov: The US Water Monitor website provides up-to-date maps on stream flow, reservoir levels, groundwater levels, and snow cover.

Websites with steps congregations can take in worship and other activities.

- http://www.earthministry.org/Congregations/stories/Georgetown/Georgetown.htm: Georgetown Gospel Chapel created an oasis garden using rain barrels to reclaim water for their gardens and to reduce runoff. They also built gardens for neighbors, providing them with gardening and compost training and have a focus on teaching gardening to kids. They distribute seedlings to the neighborhood.

- http://www.webofcreation.org/Earth%20Solutions/Water.htm: A page from the Web of Creation website outlining the water crisis with links to information at other websites and to the Web of Creation's own community transformation programs.

- http://www.newdream.org/tttoffline/index.php: The Center for a New American Dream's "Turn the Tide" program is a nine-step program involving simple lifestyle changes that impact the environment. The seventh and eighth steps in this process are eliminating lawn and garden pesticides and installing high-efficiency showerheads and low-flow faucets. By signing up for this program you can calculate the amount of water saved and greenhouse-producing emissions that you and your congregation help to prevent through these actions. This innovative web-based resource is easy to use and can really give members the sense that their actions are making a positive, measurable impact.

- http://www.kiwilink.co.nz/~hippies/greening%20Bible%20Studies.htm: The Christian Ecology Link in the United Kingdom has four Bible studies including scriptural passages and questions for discussion on the topics of sustainability, stewardship, simple living and justice for the poor reproduced on the Christian Ecology Network Aotearoa (CENA) website.

- http://www.risc.org.uk/garden/: An edible garden built on a 100 foot x 30 foot roof in the center of Reading, England.

- http://www.usgbc.org/: LEED: Leadership in Energy and Environmental Design (building design guidance from the US Green Building Council).

Some informational websites on water issues.

- http://www.unesco.org/water/: United Nations Educational Scientific and Cultural Organization's (UNESCO) website providing information on global water issues.

- http://freshwater.unep.net: United Nations Environment Programme's (UNEP) website on global freshwater supply.

- http://www.epa.gov/OWOW/NPS: US Environmental Protection Agency's Office of Wetlands, Oceans, and Watersheds' "Nonpoint Source Pollution" website containing successful case studies and great interactive resources for kids.

- http://www.epa.gov/water: US Environmental Protection Agency's Office of Water website includes links to information on local drinking water information, the US EPA's Environmental Kids Club (http://www.epa.gov/kids/), as well as other water issues.

- http://egov.cityofchicago.org/city/webportal/portalDeptCategoryAction.do?BV_SessionID=@@@@1826359105.1146236400@@@@&BV_EngineID=ccccaddhjddjgflcefecelldffhdfgn.0&deptCategoryOID=-536889314&contentType=COC_EDITORIAL&topChannelName=Dept&entityName=Environment&deptMainCategoryOID=-536887205: The roof garden on top of Chicago's city hall.

- http://www.greenroofs.com: The international green roof industry's resource and online information portal for promoting the earth-friendly technology of organic green roof architecture.

- http://www.ecobusinesslinks.com/green_roofs_green_roof_garden_design.htm: A few green roof installers in the US and throughout the world. There are many more; some other websites can be found in the "What To Do" lists, above.

Possible funding sources for projects include the following.

- http://www.dnr.state.wi.us/org/water/wm/nps/financial.htm: Funding helps for reducing nonpoint source pollution in Wisconsin.

- http://www.greenroofs.com/Greenroofs101/industry_support.htm#Possible%20U.S.%20Grants: An online article with suggestions on obtaining grants under Section 319 of the Clean Water Act.

Books

Donald, Rhonda Lucas. 2001. *Water Pollution*. New York: Children's. A non-fiction book for elementary/jr. high children describing causes of and possible solutions for water pollution.

Dorros, Arthur. 1991. *Follow the Water from Brook to Ocean.* New York: HarperCollins. This illustrated storybook for juveniles follows two children as they find out where their water goes.

Green, Jen and Mike Gordon (illustrator). 2001. *Why Should I Save Water*. London: Hodder Wayland. (2005. Hauppauge, NY: Barrons Educational Services.) An introduction to water conservation for youth.

Holling, Holling Clancy. 1941. *Paddle-to-the-Sea*. Boston: Houghton Mifflin. A classic story, for juveniles, about the Great Lakes and its watershed system told through a boy and his toy canoe.

Krueger, Frederick W. 1995. *The Lord's House: A Guide to Creation Careful Management of Church Facilities*. Shakopee, MN: Macalester Park. A text designed for helping churches to become better earth stewards with a very helpful section on gardening, including alternative lawns with insights for introducing native plants into the lawn to minimize watering and care while maintaining freshness and connection to one's own area. It also includes sections on energy use and reduction.

Osmundson, Theodore. 1999. *Roof Gardens: History, Design, and Construction*. New York: Norton. An illustrated study of gardens built on building roofs. It includes a history of roof gardens dating back to the hanging gardens of Nebuchadnezzar; summarizes contemporary design principles; details the techniques used in constructing durable and safe gardens; and gives guidelines for the selection of plants, planting procedures, and maintenance.

Ward, Diane Raines. 2002. *Water Wars: Drought, Flood, Folly and the Politics of Thirst.* New York: Riverhead. An introduction to the scientific and political issues surrounding water.

Activities

- Worship near a body of water. Have a remembrance of baptism service, or even a baptism there.

- Make a connection with any water near you—stream, river, lake, wetland, or pond. Learn about this water and its relation to the land around you. Adopt it or some portion of it (as groups adopt portions of a road to care for) in order to care for it and advocate for its continuance.

- Adopt a watershed. Learn about where your water flows after it leaves your land. Periodically monitor and visit your watershed. Follow EPA's "Fifteen Things You Can Do to Make a Difference in Your Watershed." See the URL: http://www.epa.gov/owow/watershed/earthday/earthday.html.

- Stencil signs saying “Dump no waste” onto local storm drains. Urban storm drain systems do not generally flow into water treatment plants, but into bodies of water. Signs can educate the community about water resources. Contact municipal authorities before placing signage. See the URL: http://www.earthwater.org/stencils/.

- Visit a water treatment facility. Learn about where water comes from for your use and where it goes after your use of it. Afterward, have a brief worship service making connections to the theme of resurrection. Water has new life when it is treated.

- Offer members ways to purchase water-saving devices, such as the Toilet Tank Bank Water Saver, made by Niagara Conservation. (See their website at the URL: http://www.niagraconservation.com.)

- Make non-toxic household chemicals available to the congregation, such as those made by Seventh Generation, see their website at the URL: http://www.seventhgeneration.com. (Other possible suppliers are listed in our section on cleaning products.)

- Organize a tour of a major city’s roof gardens. Add a “green fee” to any costs for the tour to buy supplies for your own rooftop or storm water runoff gardens.

- Have the youth group start seedlings using organic methods as a winter-time project to offer for sale in the spring. Herbs are a particularly attractive option, and healthy. Provide guidance for people to start herb gardens at home. (It also saves them money on their food bills by eliminating trips to the supermarket’s spice racks.)

Bulletin/Newsletter Green Notes

Bulletins and newsletters can inspire members to reflect on these issues. Here are some ideas:

- Highlight the congregation’s commitment to water conservation.

- Show a chart of the congregation’s water usage**,** either from the water bill, or from periodically reading the water meter.

- Provide a checklist of things the congregation has/will do and what members can do.

- List some quotations about water such as the following compiled as part of the “Environmental Quotes” found on the US EPA Region 2 website at the URL: http://www.epa.gov/Region2/library/quotes.htm:
  - “The ocean is tired. It’s throwing back at us what we’re throwing in there.” **Frank Lautenberg**, US Senator, on cases of dumped waste washing ashore at beaches, quoted in *USA Today*, 11 August 1988.

- ◊ "Water is H_2O, hydrogen two parts, oxygen one, but there is also a third thing, that makes it water and nobody knows what that is." **D.H. Lawrence,** (1885-1930), *Pansies*, 1929.
- ◊ "For many of us, water simply flows from a faucet, and we think little about it beyond this point of contact. We have lost a sense of respect for the wild river, for the complex workings of a wetland, for the intricate web of life that water supports." **Sandra Postel,** *Last Oasis: Facing Water Scarcity*, 2003.
- ◊ "I want to make it clear, if there is ever a conflict (between environmental quality and economic growth), I will go for beauty, clean air, water, and landscape." **Jimmy Carter**, quoted in the *New York Times*, September 19, 1976.
- ◊ "The life of every river sings its own song, but in most the song is long marred by the discords of misuse." **Aldo Leopold** (1886-1948), *Sand County Almanac*.
- ◊ "The use of sea and air is common to all; neither can a title to the ocean belong to any people or private persons, forasmuch as neither nature nor public use and custom permit any possession therof." **Elizabeth I of England** (1533-1603).
- ◊ "The air, the water and the ground are free gifts to man and no one has the power to portion them out in parcels. Man must drink and breathe and walk and therefore each man has a right to his share of each." **James Fennimore Cooper** (1789-1851), *The Prairie* 1827.
- ◊ "I've known rivers:
  I've known rivers ancient as the world and older than the flow of human blood in human veins.

  My soul has grown deep like the rivers."
  Langston Hughes, "The Negro Speaks of Rivers," 1926.
- ◊ "Civilization began around wetlands; today's civilization has every reason to leave them wet and wild." **Edward Maltby**, *Waterlogged Wealth*, 1986.

♦ See the many wonderful readings in The Earth Bible Series. Norman C. Habel and Shirley Wurst, editors (Pilgrim Press, Cleveland, OH), vol. 1, *Readings From the Perspective of Earth* (2000); vol. 2, *The Earth Story in Genesis* (2000); vol. 3, *The Earth Story in the Wisdom Tradition* (2001); vol. 4 *The Earth Story in Psalms and Prophets* (2001); and vol. 5, *The Earth Story in the New Testament* (2002).
The following is a sample from the series on the importance of water for all of creation by Laura Hobgood-Oster, "For Out of the Well the flocks were Watered: Stories of Wells in Genesis," *The Earth Story in Genesis*, pp. 192-193.

> *'but a stream would rise from the earth': Creation (Genesis 2.5-6)* …
> Before the Lord God acts, forming *adam* (a human/ground being) from the *adamah* (arable ground), Earth acts. Nothing could live—no herbs, no plants, no *adam*—until water emerged. Therefore, from the womb of Earth a stream rises. …
> When the stream rises from the womb of Earth enough water comes forth for 'the whole face of the ground'. In the beginning Earth's principle is one of no segregation between some who need water and others who need

water, no hierarchy of rights to the water. Rather, when the stream arises it covers all. The image is of abundance and access to the essential stuff of life. The voice of Earth ushers in life through watering the entire ground.

- "Only when the last tree has died and the last river been poisoned and the last fish caught, will we realize that we cannot eat money."
  North American Cree Indian
  (Quote found on the Christian Ecology Network Aotearoa (CENA) website at the URL: http://www.kiwilink.co.nz/~hippies/greening%20Bible%20Studies.htm.)

Section 6: Environmental Impact of Cleaning Products

The Lord God took the man and put him in the garden of Eden to serve it and preserve it. (Genesis 2:15)

The earth lies polluted
under its inhabitants;
for they have transgressed laws,
violated the statues,
broken the everlasting covenant.
Therefore a curse devours the earth,
and its inhabitants suffer for their guilt;
therefore the inhabitants of the earth dwindled,
and few people are left. (Isaiah 24:5-6)

When you hide your face, they are dismayed;
when you take away their breath, they die
and return to their dust.
When you send forth your spirit, they are created;
and you renew the face of the ground. (Psalm 104:29-30)

Theological Reflections

The Bible speaks to humanity's kinship with the rest of creation. Based on Genesis 2:15, humanity's role in creation is to preserve God's garden earth for future generations. Isaiah 24:5-6 talks about the land being polluted by its inhabitants because humanity has turned away from the laws of God. A major consequence of using traditional commercial cleaning products is that they pollute our land and our water supplies.[35] One basic change congregations can make in order to promote healthier lifestyles and protect the environment for future generations is to use environmentally-friendly cleaning products. In making this change, you can renew the earth in the wake of the spirit's presence.

The Ecological Problem

Many traditional cleaning products used in church buildings cause health problems and contribute to the destruction of the environment. Chlorine and phosphates are especially damaging to the atmosphere and the environment.[36] Most traditional commercial cleaning products are human-made, contain these or other toxic substances, and pollute the land, underground drinking water, streams, rivers, lakes, and oceans. For example, when a person uses a traditional toilet bowl cleaner, the many toxic chemicals that are contained in the product are flushed down the drain and into the water cycle. It is estimated that people

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[35] Orcutt, Andrea. Unpublished. *Restoring the Earth: Creating a New Religious Movement*. p. 89.

[36] Berthold-Bond, Annie. 1990. *Clean & Green: The Complete Guide to Nontoxic and Environmentally Safe Housekeeping*. Woodstock, NY: Ceres. p. 7.

flush 12 billion pounds of traditional household cleaning products down the drain each year.[37] Because municipal sewage treatment plants are not designed to handle them and because they are foreign to the natural world and do not readily break down, these chemicals spread in the environment where they cause land and water pollution, and they end up being stored in the fatty tissue of wildlife.[38] One way to mitigate this problem is to use compounds in our cleaning products that naturally break down.

A related issue is that chlorofluorocarbons (CFC's) propellants in aerosols were banned in the United States by the EPA in 1978, because CFC's were scientifically shown to be the leading cause of ozone depletion. Unfortunately, many substitute propellants currently used in aerosol cans still destroy the ozone layer, only to a lesser extent.[39] Depletion of the ozone layer increases the amount of ultraviolet radiation that reaches the earth. This increase in ultraviolet radiation causes melanoma and other forms of skin cancer, weakens the human immune system, and causes eye cataracts.[40] It also has a genetic impact on the food chain from the smallest microorganisms in the ocean all the way up to humans. To mitigate this problem you can refrain from using products containing aerosol propellants.

Human Justice Issues at Stake

Many of the toxic chemicals in traditional cleaning products can cause cancers, respiratory problems, skin ailments, and rashes. Approximately 99% of chemicals sold are not subject to chronic—long-term—safety testing.[41] One cannot assume that these products are safe for our bodies or for the environment, especially when used for long periods of time. Chemicals found in traditional cleaning products can create cumulative poisoning over a person's lifetime. Body burden is a term used by scientists to refer to the contamination in a person's body that is caused by pollution.[42] (A place where you can see what may be in your body from using common household items is the website hosted by the Environmental Working Group found at the URL: http://www.ewg.org/reports/bodyburden/usertest/index.php.) Is it worth poisoning your body to use products containing these harmful chemicals?

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[37] Healthgoods.com. "Home Chemicals Short Course: Household Hazardous Products." Found at the URL: http://www.healthgoods.com/Education/Healthy_Home_Information/home_chemicals_short_course/household_hazardous_products.htm when accessed on March 27, 2006.

[38] Berthold-Bond, Annie. 1990. *Clean & Green: The Complete Guide to Nontoxic and Environmentally Safe Housekeeping*. Woodstock, NY: Ceres. p. 12.

[39] Healthgoods.com. "Home Chemicals Short Course: Household Hazardous Products." Found at the URL: http://www.healthgoods.com/Education/Healthy_Home_Information/home_chemicals_short_course/household_hazardous_products.htm when accessed on March 27, 2006.

[40] Orcutt, Andrea. Unpublished. *Restoring the Earth: Creating a New Religious Movement*. p. 98.

[41] Hammet, Wilma. 2004. "Household Hazardous Products." Found on the healthgoods.com website at the URL: http://www.healthgoods.com/Education/Healthy_Home_Information/Home_Health_Hazards/household_hazardous_products.htm when accessed on March 24, 2006.

[42] Orcutt, Andrea. Unpublished. *Restoring the Earth: Creating a New Religious Movement*. p. 89.

What To Do as a Congregation

As a congregation you can either buy environmentally harmless products or make your own environmentally sensitive cleaning products and educate members and the community to do the same. You can use every decision and every change in your congregational practices as an opportunity to educate members to practices for their homes.

- You can set guidelines for the appropriate use of cleaning products in the congregation. Such guidelines are an integral part of adopting best cleaning practices that also meet your congregation's ethical vision. In consultation with the maintenance staff and those doing the cleaning, you can determine which environmentally-friendly products work the best in your facility based upon its current usage. Post these guidelines in custodial workrooms and make sure that they are part of the training manual for new maintenance staff and volunteers as a means to ensure that the facility is cleaned effectively with the most efficient use of resources and that is in a manner consistent with your ethical guidelines.
  - It is important to realize that many commercially available environmentally-friendly cleaning products are more expensive than traditional commercial cleaners. However, there are several good, environmentally sensitive, "homemade" solutions that are much less costly than even traditional cleaning products. These cleaning agents can be made from common, safe, and inexpensive household items.
    One of these products is an all-purpose cleaner that is made out of baking soda, vinegar, and water. By mixing two tablespoons of baking soda with one pint of warm water and a small amount of vinegar, you can create a sprayable solution for cleaning grease.
    A second common cleaning product that can be made out of inexpensive household items is a scouring powder for cleaning ceramic and porcelain surfaces. This product is made with baking soda and Murphy Oil Soap. First sprinkle baking soda on the surface to be cleaned, then a few drops of oil soap; scrub and rinse well.[43]
    A great resource for hundreds of environmentally-friendly homemade cleaning products is the book *Clean & Green: The Complete Guide to Nontoxic and Environmentally Safe Housekeeping* by Annie Berthold-Bond (Ceres, 1990).
  - In developing your guidelines, look for products or recipes using biodegradable, non-petroleum based detergents that are free of phosphates (which cause algae blooms), chlorine (which creates dioxins), and brighteners (which are often toxic fluorescent chemicals).
  - Some of the areas that the guidelines should address include cleaning:
    - restrooms – what detergents are to be used to clean counters, sinks, toilets, and showers (if you provide them for those who may bike to church)

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[43] The Jane Goodall Institute for Wildlife Research, Education and Conservation. 2003. "Roots and Shoots Eco-Cleaning (EcoTeam Lesson 3: The Water Cycle)." Found in down-loadable format at the EcoTeam website hosted by Warren-Wilson College at the URL: http://www.warren-wilson.edu/~elc/ecoteam/rs3.PDF when accessed on March 27, 2006.

- kitchens – what detergents are appropriate for washing dishes (including in the dishwasher, if you have one); washing the towels & washcloths; and for cleaning the appliances, counters, and floors
- dining area – what detergents to use when washing the cloth table coverings & napkins and for cleaning the tables, floors, and chairs
- windows – what glass cleaner to use
- floors – the cleaning methods for carpeted areas, wood floors, surfaces covered in tile and linoleum, as well as bare concrete floors (often found in utility areas and workrooms). Some sources recommend cleaning concrete with strong caustics or acids when removing grime or stains but there are less toxic alternatives.

◊ Also include in your guidelines the appropriate way for cleaning altar paraments and clergy vestments. In doing this, you incorporate your vision for environmental responsibility into your worship practices. When necessary, you can use environmentally-friendly dry cleaning services available in many communities.

◊ In preparing these guidelines you need to make yourselves aware of the differences between "regular" products, those that appear to be environmentally-friendly—those that "green-wash" themselves—and the most environmentally-friendly products available. Products that are certified by independent organizations, like Green Seal in the US and Environmental Choice in Canada, are more environmentally-friendly than traditional products. However, not all environmental certification systems are as robust as others. Some products are "certified" as environmentally-friendly that contain chemicals which are not much different from those found in traditional cleaning products.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into our everyday life. You can educate yourselves and your neighbors about using environmentally-friendly cleaning products in your homes. Educating your children is one of the first steps you can take to making the world better for future generations.

♦ Implementing many environmentally-friendly cleaning practices at home is not difficult. You can use the cleaning guidelines for the congregation at home. When following the congregation's "homemade" recipes, you can even tithe and bring a tenth of the cleaner you make to the congregation's collection point for the maintenance staff and cleaners to use at church.

Resources

Websites

Some websites on the toxicity of cleaning products and the types of alternatives available.

- http://www.care2.com/channels/lifestyle/home: The Care2 website provides a number of ideas for what type of environmentally-friendly cleaning products are available; as well as ideas on energy savings, general building ideas, and more.

- http://www.newdream.org/newsletter/greencleaning.php: The Center for a New American Dream website has some general comments on what to look for and the problems associated with voluntary certification programs and supplier claims for "environmentally-friendly" products. A list of some certified products can be found at their http://www.newdream.org/procure/products/approved.php page.

- http://www.greenseal.org/certproducts.htm: The Green Seal list of products for which the manufacturer has obtained certification. Green Seal also makes product recommendations based upon their investigation of particular market sectors. The recommendation process is not as rigorous as the certification process; nevertheless, the specific manufacturers do not seek out this endorsement by Green Seal, and Green Seal is not compensated for making any specific product recommendations. These recommendations can be found at the URL: http://www.greenseal.org/recommendations.htm.

Environmentally-friendly cleaning products can be purchased from several stores, as well as through the internet. These are just a few of the websites where they may be purchased.

- http://www.ecos.com: Earth Friendly Products.

- http://www.realgoods.com/shop/shop2.cfm/dp/208: Gaiam.com Inc.'s "Real Goods" website offers environmentally-friendly cleaning products from a variety of suppliers.

- http://www.naturallyyoursclean.com: Naturally Yours

- http://www.simplepureclean.com: Seaside Naturals

- http://www.seventhgeneration.com: Seventh Generation, Inc.

- http://consumer.simplegreen.com/index.php: Sunshine Makers, Inc.'s "Simple Green" brand.

Books

Berthold-Bond. Annie. 1999. *Better Basics for the Home: Simple Solutions for Less Toxic Living*. New York: Three Rivers. Included are 868 practical formulas for household cleaners, soaps, disinfectants, stain removers, personal care, and more. A hardcover edition was published in 2004 by Rodale.

Berthold-Bond, Annie. 1990. *Clean and Green: The Complete Guide to Non-Toxic and Environmentally Safe Housekeeping*. Woodstock, NY: Ceres. This book offers 485

recipes to create environmentally-friendly homemade cleaning supplies. An updated edition was published in 1994.

Dadd, Debra Lynn. 1997. *Home Safe Home: Protecting Yourself and Your Family from Everyday Toxics and Harmful Household Products*. New York: Tarcher/Putnam. This is a combination of her 1990 *Nontoxic, Natural & Earthwise* and 1992 *The Toxic Home & Office*.

Hunter, Linda Mason and Mikki Halpin. 2005. *Green Clean: The Environmentally Sound Guide to Cleaning Your Home*. New York: Melcher. A book offering cleaning suggestions as well as disposal tips.

Logan, Karen. 1997. *Clean House, Clean Planet*. New York: Pocket. A book with cleaning solutions for the home using a list of basic ingredients.

Siegel-Maier, Karyn. 1999. *The Naturally Clean Home: 101 Safe and Easy Herbal Formulas for Non-Toxic Cleaners*. Pownal, VT: Storey. The title says it all.

Steinman, David and Samuel S. Epstein. 1995. *The Safe Shopper's Bible: A Consumer's Guide to Nontoxic Household Products, Cosmetics, and Food*. New York: Wiley. An older book listing products' pros and cons. Unfortunately, the formulation of several products has changed since the book's publication. However, it is a guide for knowing which harmful ingredients to look for.

Activities

- Make some of the environmentally-friendly cleaning products found in one of the resource books and offer these products to members of the congregation for a donation to one or more of the congregation's mission activities.

- Seek out a distributor of environmentally-friendly cleaning products in your area and offer to sell these products at an eco-fair held by the congregation on Earth Day or other "Caring for Creation Sunday" event.

Bulletin/Newsletter Green Notes.

Post a recipe for a homemade cleaning product in each monthly newsletter. Along with the recipe, include the list of toxins removed from the congregation and homes of members by using this recipe, as well as the adverse health and environmental effects that were eliminated.

Section 7: Environmental Impacts of Food Choices

And all ate and were filled; and they took up what was left over of the broken pieces, twelve baskets full. And those who ate were about five thousand men, besides women and children. (Matthew 14: 20-21)

Then the Lord said to Moses, "I am going to rain bread from heaven for you, and each day the people shall go out and gather enough for that day. In that way I will test them, whether they will follow my instruction or not. (Exodus 16:4)

(The Lord said,) "I have come down to deliver them from the Egyptians, and to bring them up out of that land to a good and broad land, a land flowing with milk and honey." (Exodus 3:8a)

[Jesus] put before them another parable: "The kingdom of heaven is like a mustard seed that someone took and sowed in his field; it is the smallest of all the seeds, but when it has grown it is the greatest of shrubs and becomes a tree, so that the birds of the air come and make nests in its branches."
He told them another parable: "The kingdom of heaven is like yeast that a woman took and mixed in with three measures of flour until all of it was leavened." (Matthew 13:31-33)

Day by day, as they spent much time together in the temple, they broke bread at home and ate their food with glad and generous hearts, praising God and having the goodwill of all the people. (Acts 2:46-47a)

Theological Reflections

Food nourishes our bodies and our souls. Food provides us with sustenance, enjoyment, and comfort. Food is basic; it comes from the life around us. Food comes from God. Food can be symbolic and is used as a key factor in teaching throughout the Bible and Jesus' ministry where we experience human hunger and God's nourishment of that hunger. 5,000 are fed, manna is sent down from heaven for the Israelites, the Promised Land is flowing with milk and honey; Jesus uses the imagery of seeds, trees, and yeast to teach his followers. Jesus chose the gift of food, the most common elements, bread and wine, so that through them humanity receives the gift of his body and blood. Meeting for a meal in both biblical times and present times can be a great equalizer. There is something about sitting around a table with others sharing nourishment that creates a moment of intimacy, community, a bond where if only for that space in time all can be peaceful. Kneeling at the altar, sharing the meal of the Eucharist, is like this as well. The communion table is the great equalizer. We all come humbly to this table to receive this gift of grace—regardless our social location. The homeless person and the corporate executive are the same as they kneel to receive the gift of this meal. Breaking bread together at any time, in any place, can become a celebration.

The Ecological Problem

In the book *World Agriculture and the Environment,* Jason Clay says that poor farming practices such as mono-crops, clear cutting of forests, dependence on chemical fertilizers and pesticides, help "drive deforestation, pollution, ocean degradation and species loss and constitute one of the most serious environmental threats in the world today."[44] These problems are caused by the production, transportation, and distribution of food. This system that has provided an apparent abundance is fundamentally unsustainable. "Agriculture has had a larger environmental impact than any other human activity and today it threatens the very systems we need to meet our food and fiber needs."[45] Current practice views farming as a "factory," with inputs and outputs, rather than as a natural, living, system upon which we are co-dependent. The primary characteristic of the current food production system is the growing of monocrops (planting the same crop on the same land year after year). When all crops are very similar, they are more susceptible to disease, forcing the use of pesticides and herbicides to control this problem. Monocrops also deplete the soil, so fertilizers are needed to maintain yields. All of this makes our food supply extraordinarily vulnerable to disruption. (In 1970, the Southern Corn Leaf Blight destroyed 60% of US corn crop). Growing monocrops also reduces the biodiversity in crops. Since 1900, 75% of the genetic diversity of crops has been lost.[46]

Current farming practices also require an extensive food transport system to moves large quantities of food long distances within containers made of plastic or aluminum. This method of processing, packaging, and shipping food not only saps the nutrients from the food that is finally consumed, but it is very energy intensive and a significant contributor to pollution and climate change. "Food in the U.S. travels an average of 1,300 miles from farm to supermarket. Almost every state in the U.S. buys 85% of its food from some place else."[47]

Not only do our farming practices contribute to global warming by shipping products halfway across the continent, our food production practices have a significant impact as well. Raising one cow in a feedlot consumes nearly 300 gallons of oil before being ready for slaughter. Calorie-for-calorie, eating beans uses only 4% of the fossil fuel as eating commercial feedlot beef does.[48] "A person eating no meat or dairy consumes around 2,500

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[44] April 2004 press release from the World Wildlife Fund.

[45] Clay, Jason. 2004. *World Agriculture and the Environment: A Commodity-by-Commodity Guide to Impacts and Practices*. Washington, DC: Island.

[46] Union of Concerned Scientists. "Industrial Agriculture: Features and Policy." Found at the URL: http://www.ucsusa.org/food_and_environment/sustainable_food/industrial-agriculture-features-and-policy.html when accessed on May 12, 2006.

[47] University of Massachusetts Extension. "Community Supported Agriculture." Found at the URL: http://www.umassvegetable.org/food_farming_systems/csa/index.html when accessed on May 12, 2006.

[48] Boyan, Steve. "How Our Food Choices can Help Save the Environment." Found on the EarthSave International website at the URL: http://www.earthsave.org/environment/foodchoices.htm when accessed on May 12, 2006.

calories of crop production each day; but people who eat just 30 percent of their food as animal products require crop production of 9,000 calories."[49] This gives a whole new meaning to the term "top predator." If developing nations increase their crop consumption rates to the current level of the developed ones, humans (only 0.5% of the world's biomass) will consume some 35% of the sun's energy given to plant life worldwide.[50] How much will we leave for other species and what does this say about our respect for all life?

Human Justice Issues at Stake

There are four different, but interrelated, issues around food:

Sustainable Agriculture is the term used to address the problems that large-scale agribusiness has created: topsoil depletion, groundwater contamination, high use of pesticides, the decline of family farms, continued neglect of the living and working conditions of farm laborers, increasing costs of production, and the disintegration of the economic and social conditions in rural communities.

Community Supported Agriculture or CSA involves members who participate by buying shares in a local, organic farm. The farmer delivers a box of produce per share every week to convenient drop-off sites during the growing season.

Urban Agriculture is a movement to use small plots of unused urban land to grow food. It is an activity that contributes to a solid community economic base through micro-enterprises.

Food Security or the community food security movement is a global issue of providing sufficient food for the world's growing population without creating widespread environmental damage. Initially, the focus was on productivity and profitability, now it is also about sustainability, which considers the long-term.

Food is something that, although currently abundant in our world, has become a luxury of the rich. Wars, poverty, governmental controls, subsidies, all affect food distribution worldwide. Global warming threatens to alter the natural systems that make most food growing possible. The following is a list regarding some of the reasons for poverty in the world:

- According to United Nations statistics, approximately 800 million people, out of a global population of six billion are either malnourished or on the verge of starvation. According to the UN the fundamental cause of world hunger is not a shortage of food in the world—in fact, there are immense surpluses, but rather that these 800 million hungry people are too poor to produce or buy the food that they need. Today the world

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[49] EarthSave International. "The Power of Your Fork." Found at the URL: http://www.earthsave.org/lifestyle/power_fork.htm when accessed on May 12, 2006.

[50] Imhoff, Marc L. et al. 24 June 2004. "Global Patterns in Human Consumption of Net Primary Production." *Nature*. pp. 870-873.

produces more food per inhabitant than at any time in human history. The real causes of hunger are poverty, inequality and lack of access to food.

- "Poverty: 1.2 billion people in developing countries live on an income of $1 a day or less. … Living at such a marginal level means an incredible vulnerability to changes in climate, crop prices, and health problems."[51]
- "Debt: Debt obligations … leave vulnerable nations with vastly reduced resources to meet people's needs. Despite recent efforts at debt relief, some countries are still spending more on debt repayment than on education, health care and nutrition combined."[52]
- "Violence and Militarism: Civil conflict disrupts agriculture, uproots people, destroys infrastructure, increases debt from military expenditure, and drains precious resources from social programs."[53]
- "Population: Increasing populations test the limits of fragile environments and … tax impoverished nations' abilities to meet their people's education, health, and nutritional needs."[54]
- "Environmental degradation: Healthy ecosystems produce abundantly; abused land does not. Misused land, depleted soils, and scarce fresh water contribute to hunger and spark conflicts that add to the problem."[55]

Food security is not just about having enough, although that is essential, but it is also about having access to wholesome, healthy, and safe food. What do we eat, and is it nourishing and healthful for our entire lives? "Serious questions about the toxicity, allergenicity, cancer risks, and nutritional content of genetically engineered foods remains unanswered. Despite these risks, the USDA continues to approve these foods (such as milk containing a growth hormone called rBGH).[56] "Genetic engineering is the largest food experiment in the history of the world. We are all the guinea pigs. …60-70% of the food on your grocery shelves contain genetically engineered (GE) components. Genetically engineered foods include substances that have never been a part of the human food supply. They are not subjected to rigorous pre-market safety testing. And they are not labeled!"[57]

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[51] Halteman Schrock, Jennifer. 2005. *Just Eating? Practicing our Faith at the Table*. PC(USA). p. 17.

[52] Halteman Schrock, Jennifer. 2005. *Just Eating? Practicing our Faith at the Table*. PC(USA). p. 17.

[53] Halteman Schrock, Jennifer. 2005. *Just Eating? Practicing our Faith at the Table*. PC(USA). p. 17.

[54] Halteman Schrock, Jennifer. 2005. *Just Eating? Practicing our Faith at the Table*. PC(USA). p. 17.

[55] Halteman Schrock, Jennifer. 2005. *Just Eating? Practicing our Faith at the Table*. PC(USA). p. 17.

[56] Cummins, Ronnie and Ben Lilliston. 2000. *Genetically Engineered Food: A Self-Defense Guide for Consumers*. New York: Marlowe. p. 47. The National Academy of Sciences suggested in an April 2000 study that more caution and more safety testing are necessary before Americans can be reassured that gene-altered foods are safe.

[57] Mothers for Natural Law. Found at the URL: http://www.safe-food.org when accessed on May 12, 2006.

"The single most important first step in rediscovering the traditional, healthy diet is changing where you shop. AS long as you are wading through 15,000 choices in a supermarket, coming up with something healthy will seem like an incredible challenge. But if you are shopping in a community cooperative store filled with whole foods and foods from local producers, all your senses will be tantalized—but in the right direction for your health."[58]

What To Do as a Congregation

As a congregation you can reduce the amount of meat served on the premises as well as educating members and your communities to shift towards a plant-based diet. You can use every decision and every change as an opportunity to educate members to practices for their homes.

- Buy from local farmers when shopping for community meals and the church's school and camping programs, including vacation church school.

- Become a drop site for a local community supported agriculture (CSA) cooperative and have members join a CSA cooperative.

- Have a world hunger day at church, so that, instead of celebrating a full meal together, you eat only what would be eaten by the millions living in poverty in this world.

- Buy organic, particularly from a local farmer.
  - "Organic products meet stringent standards: Organic certification is the public's assurance that products have been grown and handled according to strict procedures without persistent toxic chemical inputs.
  - Organic food tastes great!: It's common sense – well-balanced soils produce strong, healthy plants that become nourishing food for people and animals.
  - Organic production reduces health risks: Many EPA-approved pesticides were registered long before extensive research linked these chemicals to cancer and other diseases. Organic agriculture is one way to prevent any more of these chemicals from getting into the air, earth and water that sustain us.
  - Organic farms respect our water resources: The elimination of polluting chemicals and nitrogen leaching, done in combination with soil building, protects and conserves water resources.
  - Organic farmers build healthy soil: Soil is the foundation of the food chain. The primary focus of organic farming is to use practices that build healthy soils.
  - Organic farmers work in harmony with nature: Organic agricultural respects the balance demanded of a healthy ecosystem: wildlife is encouraged by including

[58] Moore Lappé, Frances. 1991. *Diet for a Small Planet, 20th Anniversary Edition*. New York: Ballatine. pp. 138-139.

forage crops in rotation and by retaining fence rows, wetlands, and other natural areas.
    - ◊ Organic producers are leaders in innovative research: Organic farmers have led the way, largely at their own expense, with innovative on-farm research aimed at reducing pesticide use and minimizing agriculture's impact on the environment.
    - ◊ Organic producers strive to preserve diversity: The loss of a large variety of species (biodiversity) is one of the most pressing environmental concerns. The good news is that many organic farmers and gardeners have been collecting and preserving seeds, and growing unusual varieties for decades.
    - ◊ Organic farming helps keep rural communities healthy: USDA reported that in 1997, half of U.S. farm production came from only 2% of farms. Organic agriculture can be a lifeline for small farms because it offers an alternative market where sellers can command fair prices for crops.
    - ◊ Organic abundance – Foods and non-foods alike!: Now every food category has an organic alternative. And non-food agricultural products are being grown organically – even cotton, which most experts felt could not be grown this way."[59]

- ♦ Plant a community garden so members and the community can harvest from the church's land.

- ♦ Hold bread baking days and instructional classes on cooking with and learning about food.

- ♦ Buy fair trade certified goods and support organizations that carry fair trade products.

- ♦ Incorporate the importance of food into worship services.

- ♦ Announce the origins of your bread and wine. From where do they come?

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into our everyday life. You can educate yourselves and your neighbors about the benefits of eating locally grown organic foods. Educating your children is one of the first steps you can take to making the world better for future generations.

- ♦ Implement the church's food purchasing guidelines at home:
    - ◊ Buy locally grown, organic foods.
    - ◊ Reduce the amount of meat that you eat.

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[59] Organic Trade Association. "10 Good Reasons To Go Organic." Found at the URL: http://www.ota.com/organic_and_you/10reasons.html when accessed on May 16, 2006.

- ◊ Become a member of a local community supported agriculture cooperative. (Generally "half-shares" are available for smaller family units.)

Resources

Websites

- http://www.newdream.org/tttoffline/index.php: The Center for a New American Dream's "Turn the Tide" program is a nine-step program involving simple lifestyle changes that impact the environment. The second and third steps in this process are reducing meat and seafood consumption. By signing up for this program you can calculate the amount of water and other resources that you and your congregation help to save by eating lower on the food chain. This innovative web-based resource is easy to use and can really give members the sense that their actions are making a positive, measurable impact.

Antibiotics

- http://www.keepantibioticsworking.com: Keep Antibiotics Working is dedicated to eliminating a major cause of antibiotic resistance, the inappropriate use of antibiotics in food animals.

Community Supported Agriculture (CSA) Programs and local Farmers' Markets

- http://www.nal.usda.gov/afsic/csa/index.html: US Department of Agriculture's Alternative Farming Systems Information Center's Community Supported Agriculture (CSA) page includes links to ways to find a CSA in your area.

- http://www.ams.usda.gov/farmersmarkets/: US Department of Agriculture's Agriculture Marketing Service National Directory of Farmers' Markets.

- http://www.csacenter.org: Wilson College's Robyn Van En Center for CSA Resources maintains a list of CSA's by state.

- http://www.localharvest.org: Local Harvest lists CSA's, farmers markets and co-ops in your area.

- http://www.farmersmarketonline.com: Farmers' Market Online is a website offering a variety of farm produce and crafts from several suppliers.

Fair Trade

- http://www.fairtraderesource.org/resources.html: The Fair Trade Resource Network offers several resources for consumer education on fair trade.

- http://www.fairtradefederation.com: The Fair Trade Federation website includes lists of producers, retailers, wholesalers, and mail order & online catalogues of fairly traded goods.

- http://www.ifat.org: International Fair Trade Association: the global network of Fair Trade Organizations.

- http://www.globalexchange.org/campaigns/fairtrade/: Global Exchange's fair trade coffee, chocolate and more; all of which can be ordered online or purchased at select locations.

- http://www.maketradefair.com: Oxfam International's Make Trade Fair campaign.

- http://americanradioworks.publicradio.org/features/food_politics/index.html: American RadioWorks, public radio's national documentary unit, webpage featuring the documentaries "Engineering Crops in a Needy World," "A Bean of a Different Color," and "The Campaign to Humanize the Coffee Trade."

Faith Based Initiatives with programs on Food, Hunger, and Sustainability

- http://www.faithinplace.org: Faith In Place, Chicago.

- http://www.earthministry.org: Earth Ministry, Seattle.

- http://www.pcusa.org/hunger/food: Presbyterian Church (USA) – "Just Eating? Practicing our Faith at the Table" resource.

Genetically Engineered Foods

- http://www.biointegrity.org: Alliance for Bio-Integrity website includes publication of 24 FDA memoranda on the hazards of genetically engineered foods.

- http://www.organicconsumers.org/gelink.html: Organic Consumers Association webpage on genetic engineering and biotechnology.

- http://www.earthsave.org/lifestyle/ge.htm: An article on the EarthSave International website on the dangers of genetically engineered crops. A second article can be found at the URL: http://www.earthsave.org/lifestyle/genfood2.htm.

- http://americanradioworks.publicradio.org/features/food_politics/index.html: American RadioWorks, public radio's national documentary unit, webpage featuring the documentaries "Engineering Crops in a Needy World," "A Bean of a Different Color," and "The Campaign to Humanize the Coffee Trade."

Organic Food

- http://www.organicconsumers.org: Organic Consumers Association addresses food safety and health issues as well as provides a buying guide.

- http://www.organic-center.org/science.nutri.php: The Organic Center's "State of Science" page on nutritional quality. They also have a page on healthy development found at the URL: http://www.organic-center.org/science.healthy.php.

- http://www.theorganicpages.com/topo/index.html: The Organic Pages Online of the Organic Trade Association. Primarily a business-to-business directory; you can search for local retail outlets of Organic Trade Association member producers/companies as well as for online suppliers.

- http://www.organic.org: Organic Vision, LLC web publication offering articles and seasonal recipes from what is found at the farmers' market.

Organic Gardening – Seeds and Supplies

- http://www.bountifulgardens.org: Ecology Action of the Midpeninsula, Inc., California.

- http://www.groworganic.com: Peaceful Valley Farm Supply, Inc., California.

- http://www.gardensalive.com: Gardens Alive!, Inc., Indiana.

- http://www.seedsavers.org: Seed Savers Exchange, Iowa.

- http://www.planetnatural.com: Sparky Boy Enterprises, Montana.

- http://www.territorial-seed.com: Territorial Seed Co., Oregon (also now operates the URL: http://www.abundantlifeseeds.com with stock remaining after the fire at the Abundant Life Seed Foundation.)

Pesticides

- http://www.organic-center.org/science.pest.php: The Organic Center's "State of Science" page on pesticides.

- http://www.panna.org: Pesticide Action Network North America is addressing such issues as the airborne drifting of pesticides into neighboring communities and ways for pesticide free lawn care.

Seafood

- http://www.audubon.org/campaign/lo/seafood/: The National Audubon Society has a handy "Seafood Wallet Card" that tells you what seafood to enjoy, to be careful of, and to avoid.

Vegetarian diet resources

- http://www.vrg.org: Vegetarian Resource Group has recipes, nutrition information and other useful stuff.

- http://www.ivu.org/vuna/: Vegetarian Union of North America offers recipes, cookbooks, and more.

Books

- Moore Lappé, Frances and Anna Lappé. 2002. *Hopes Edge: The Next Diet for a Small Planet*. New York: Tarcher/Putnam.

- Robbins, John. 2001. The Food Revolution: How Your Diet Can Help Save your Life and Our World. Berkeley, CA: Conari.

Section 8: Environmental Impacts of Transportation

God saw everything that he had made, and indeed, it was very good. (Genesis 1:31a)

"And have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth." (Genesis 1:28b)

Thus says the Lord concerning this people:
Truly they have loved to wander,
they have not restrained their feet;
therefore the Lord does not accept them,
now he will remember their iniquity
and punish their sins. (Jeremiah 14:10)

Now by chance a priest was going down that road; and when he saw him, he passed by on the other side. … But the Samaritan while traveling came near him. (Luke 10:31, 33a)

"Tell the daughter of Zion,
Look, your king is coming to you,
humble, and mounted on a donkey,
and on a colt, the foal of a donkey." (Matthew 21:5)

Theological Reflections

In Genesis, God sees all creation—*all* of the life that exists on earth—as "good." And God gave humans the responsibility of caring for this good Earth. Now, for the first time in human history, human behavior directly impacts that future existence of God's good creation. The most significant threat to creation is the increase in the earth's temperature, known as global warming. The rising of the earth's temperature threatens the existence of many species, crop production, and water levels, and it greatly increases human displacement (just to name a few). Human beings, who are themselves creatures of God's creation, must answer God's call to care for the gift that is the earth given for all. We must accept the challenge to care for creation with freedom and grace by claiming God's freeing love for us in Jesus Christ.

A major source of global warming is how we transport ourselves from one place to the next. And we are now paying the price for our means of transportation with increasing temperatures and all of its associated problems.

The Ecological Problem

The United States contributes more greenhouse gases that increase global warming than any other country in the world. Of these greenhouse gases, the one produced in the greatest quantity is carbon dioxide, which is created during combustion – when we burn things like gasoline to power our cars. As the country with the most cars the environmental costs of automobile transportation in the United States are staggering. Twenty percent of U.S.

greenhouse gases come from car emissions, 330 million tons in 1997 and 350 million tons in 2003.[60]

Producing new cars adds another 30-50 million tons of emissions.[61] These new vehicles replace older ones. Common wisdom is that new vehicles get better mileage than older ones; however, average vehicle emission rates have been creeping up since 1988 so that your new vehicle may not be better than the one it replaces, especially if it is larger than the previous one.[62] In addition, discarded cars produce 5 million tons of un-recycled waste annually.[63] So even as we are filling up our landfills with waste by-products from making new cars and our thrown out older vehicles, our bigger, newer cars are producing more gases that are toxic to us and to our environment.

Automobiles not only produce waste and emit dangerous air pollution and greenhouse gases—they *disconnect* us from creation. Driving in our cars, rather than walking or biking, means we have little time to appreciate the flower gardens in front of neighbors' lawns, or to stop and greet a friend walking down the street. Using the car as primary mode of transport, rather than walking, insulates us from a deeper sense of *place, community and fellowship* with creation. (For longer trips, public transportation is 6 to 15 times more fuel efficient than using an automobile,[64] and it allows us to talk with our fellow travelers, rather than being frustrated by their presence in another car, which is blocking us from reaching our destination.) Transporting ourselves in these ways empowers each of us to connect with our community and love our neighbors.[65]

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[60] Ix, Christopher Prouty. 2000. "How Successful has the CAFE Standard been at Curtailing Carbon Dioxide Emitted from Automobiles?" Found on Thomas H. (Tom) Tietenberg's page of the Colby College, Maine website at the URL: http://www.colby.edu/personal/t/thtieten/air-caron.html when accessed on May 24, 2006. Also; DeCicco, John, Frenda Fung, and Feng An. 2005. *Automakers' Corporate Carbon Burdens: Update for 1990-2003. Washington, DC: Environmental Defense*.

[61] Austin, Duncan and Amanda Sauer. 2003. "Car Companies and Climate Change: Measuring the Carbon Intensity of Sales and Profits." Found on the World Resources Institute website at the URL: http://earthtrends.wri.org/features/view_features.php?theme=3&fid=53 when accessed on May 24, 2006. Also; DeCicco, John, Frenda Fung, and Feng An. 2005. *Automakers' Corporate Carbon Burdens: Update for 1990-2003. Washington, DC: Environmental Defense*.

[62] DeCicco, John, Frenda Fung, and Feng An. 2005. *Automakers' Corporate Carbon Burdens: Update for 1990-2003. Washington, DC: Environmental Defense*. Available on the Environmental Defense website at the URL: http://www.environmentaldefense.org/article.cfm?contentID=4721 when accessed on May 24, 2006.

[63] US Environmental Protection Agency. "Municipal Solid Waste: Auto Parts." Found at the URL: http://www.epa.gov/garbage/auto.htm when accessed on May 24, 2006.

[64] Corson, Stephanie. "Private Transportation vs. Mass Transit: The Environmental Aspects." Found on the University of South Florida website at the URL: http://www.cas.usf.edu/philosophy/mass/Stephanie.html when accessed on May 24, 2006.

[65] Jacobsen, Eric O. 2003. *Sidewalks in the Kingdom: New Urbanism and the Christian Faith*. Grand Rapids: Brazos.

We must re-think the way we get from one point to another and where these points are located. All too often, the ease of using a car blinds us from other less harmful transportation options that exist, such as walking or bicycling. Yet the choice of an alternative to the automobile is often not an option because we are physically so far removed from the places to which we are going. Homes are isolated from our workplaces, friends, family, grocery stores, and schools. The only way we can get from one of these islands to the next is with an automobile. We need to rethink our lifestyle and what it means to be an intentional community—both as a worshiping community of the church as well as a secular community gathered for work, recreation, and educational activities. Creating and living in communities and neighborhoods that require little or no car travel helps fulfill our responsibility to all of God's creation.

Human Justice Issues at Stake

Major contributors to air pollution and global warming are individuals and nations burning huge quantities of gasoline to transport themselves from one point to another. Unfortunately it is poor individuals and nations, those least able to respond, who are affected the most. In the U.S., the air pollution from cars used by suburban residents to enter the city for work and recreation affects the urban poor, often ethnic minorities, creating higher incidence of asthma and other health complications in our most vulnerable people.

Caring for creation includes not just affirming plants, animals, and the environment, but also humans. Humans are a part of God's global ecosystem, too. All too often we neglect and discriminate certain human beings (the poor, those of a different skin color than us) the same way we neglect and discriminate against the earth. By living, working, and playing in areas designed around public transportation we can re-create our communities. The strangers next door become neighbors when we use the opportunity at the bus stop and train station to come close and get to know them as we are going about our everyday travels. In this way we can come to care for everyone in our community at the same time that we are promoting the welfare of the environment.

What To Do as a Congregation

As a congregation, you can reduce your fuel consumption as well as educating members and your communities to do the same. You can use every decision and every change as an opportunity to educate members to practices for their homes.

- Install bike racks next to the church's main entrance. A rack was donated to Holy Trinity Lutheran Church on Chicago's north side. A member there says, "It makes you think when you go in. It reminds me of being transportation conscious."

- Have the staff use high mileage automobiles for church functions (see the URL: http://www.fueleconomy.gov to compare the fuel efficiency of each model).

- Purchase a van or bus for transporting members to weekly services and other church functions. Better yet, where alternative fueling stations are available, negotiate with local officials to allow your church access to these fuel supplies and purchase an alternative fuel van or bus for these purposes. Help the environment as you promote community within the congregation.

- Designate Car-Free (or Drive-less) Sundays when all congregants must walk, bike, use public transportation, or congregation sponsored car/bus/van pools to get to church. See the resources available from Earth Ministry's website (http://www.earthministry.org/carfree.htm) for help organizing these days.

- Organize an alternative commuter fair at the church. Have a ride-matching table and information on bike to work days, public transportation, etc.

- Encourage parishioners to walk and use sidewalks: "Good sidewalks get almost continual use and can increase the safety of an area, provide a setting for informal contact, and assimilate children into the community's life."[66]

- Open the church kitchen and provide space for members to cook meals. This allows members to make one car trip into town: to pick up children from school or other activities, run errands, and gather around a meal with other members who are in town as well. Pastor Kyle Childress encourages such "pick-up" events at his church, Austin Heights Baptist Church in Nacogdoches, Texas. This is a great practice for rural areas in particular, where the number of long car trips in a day can pile up.[67]

- Each month have a designated person check the air pressure in every car in the parking lot; proper air pressure means better fuel efficiency. Use an air pump to correct the pressure.

- Publicly oppose urban sprawl, which promotes dependence on cars.

- Install showers and changing areas in your church to encourage members to bike from longer distances.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into everyday life. You can educate yourselves and your neighbors about reducing the amount of gasoline your

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[66] Jacobsen, Eric O. 2003. *Sidewalks in the Kingdom: New Urbanism and the Christian Faith*. Grand Rapids: Brazos. p. 84.

[67] Childress, Kyle. 8 March 2005. "Good Work: Learning about Ministry from Wendell Berry", *Christian Century*. p. 33.

household uses. Educating your children is one of the first steps you can take to making the world better for future generations.

- Trade in your SUV for a more fuel-efficient car. Eliminate one car from your family pool.

- Perform all of the regular maintenance on your car. Keep the proper air pressure in your tires. When driving over 60 m.p.h. lower your speed.

- Use an alternative to the automobile: walk, bicycle, or use public transportation.

- Carpool to church with others who live in your area.

- Explore a car sharing program if you live in a city.

Resources

Websites

- http://www.newdream.org/tttoffline/index.php: The Center for a New American Dream's "Turn the Tide" program is a nine-step program involving simple lifestyle changes that impact the environment. The first step in this process is skipping one car trip each week. By signing up for this program you can calculate the amount of greenhouse-producing emissions that you and your congregation help to prevent through alternative transportation choices. This innovative web-based resource is easy to use and can really give members the sense that their actions are making a positive, measurable impact. They also have a page on greener automobile options at the URL: http://www.newdream.org/consumer/cars.php.

- http://www.protectingcreation.org: The Interfaith Climate Change Network, a collaboration between the Eco-Justice Working Group of the National Council of Churches of Christ (NCC) and the Coalition on the Environment and Jewish Life (COEJL) to pursue justice for the poor and address global climate change. One of their projects is coordinating fuel economy campaigns in several states.

- http://www.commuterchoice.com: The Association for Commuter Transportation's "Commuter Choice" website for linking commuters, employers, and transportation providers throughout the country.

- http://www.carsharing.net/where.html: Find out where you can join a car sharing organization. Use a car only when you need to!

- http://www.hybridcenter.org: The Union of Concerned Scientists' "Hybrid Center" for consumer information on gasoline-electric cars. Learn about tax incentives for owning hybrids autos, and view the buyer's guide to purchasing a hybrid.

- http://www.aceee.org/Consumer/consumer.htm: American Council for an Energy-Efficient Economy's consumer resource page; and their "Green Book: The Environmental Guide to Cars and Trucks" found at the URL: http://www.GreenerCars.com allows you to check out the "greenest" and "meanest" vehicles of the year. Or, if you are shopping for a vehicle, you can purchase a low-cost subscription for access to information on all 2000-2006 model year vehicles.

- http://www.walkable.org: Walkable Communities, Inc. helps communities, or parts of communities, become pedestrian friendly.

- http://www.critical-mass.org: The web home of Critical Mass, a grass roots international cycling group.

- http://www.greencar.com: The Green Car Journal focuses on reviews, news and information about fuel-efficient car technologies with input from both environmental groups and the automobile industry.

- http://www.carfree.com/cft/: Carfree Times, an online newsletter about alternative transportation to accompany J. H. Crawford's book *Carfree Cities*.

- http://www.pps.org/transportation: Project for Public Spaces' transportation page—plan for people, you will get people; plan for cars, you will get cars.

- http://www.rmi.org/sitepages/pid18.php: The Rocky Mountain Institute maintains a page devoted to strategies for reducing the environmental impacts of transportation.

Books

Brower, Michael and Warren Leon. 1999. *The Consumer's Guide to Effective Environmental Choices: Practical Advice from the Union of Concerned Scientist*. New York: Three Rivers. Contains excellent information on the impact of our transportation choices and what steps can be made towards more sustainable choices on this issue, and many other environmental issues as well.

Crawford, J. H. 2000. *Carfree Cities*. Utrecht, The Netherlands: International. A look at car free cities as the basis for sustainable development.

Durning, Alan Thien. 1996. *The Car and the City: 24 Steps to Safe Streets and Healthy Communities*. Seattle: Northwest Environmental Watch. This is not just a book on city driving but on what can be done to rebuild cities to make them safe and equitable communities.

Gershon, David and Robert Gilman. 1992. *Household Ecoteam Workbook: A Six-month Program to Bring Your Household into Environmental Balance*. Woodstock NY: Global Action Plan for the Earth. An excellent, easy-to-use, resource to assess areas

for improving home energy, water, and transportation efficiency, and thereby reducing waste.

Jacobsen, Eric O. 2003. *Sidewalks in the Kingdom: New Urbanism and the Christian Faith*. Grand Rapids: Brazos. A book on shared community life in cities full of hope.

Lotter, Donald W. 1993, rev. & updated 2002. *EarthScore: Your Personal Environmental Audit and Guide*. Lafayette CA: Morning Sun. An overall home environmental audit guide that contains a section on evaluating your transportation usage patterns.

Activities

- Have a car wash and meal at church. Suggest people pay more for lower fuel-efficient vehicles – promote fellowship by serving a meal as well. Use the proceeds to purchase bike racks, install showers, etc.

- Work with a consultant and auto reclamation facility to encourage people to "turn in" their high mileage vehicles. By donating them to the church, which will "retire" them, members can gain tax benefits.

Bulletin/Newsletter Green Notes

- Showcase the congregation's support for alternative transportation in a monthly column in the church's newsletter. Let everyone know how many people are car/van pooling to church each week and support the formation of additional ride-sharing pools.

Section 9: Environmental Impacts of Indoor Air Quality

Let everything that has breath praise the Lord! Praise the Lord! (Psalm 150:6)

Theological Reflections

Each hour, a person takes approximately 1,000 breaths, and each of these breaths is a gift from the Lord. Every breath taken is also a sign of the precious relationship that we have with the Holy Spirit, the same word in Hebrew means both "spirit" and "breath" (as well as "wind") when translated into English. However, all too often, the breaths that all creatures take are filled with polluted air and toxic chemicals. The air, like all of God's creation, is a precious gift that we are called to care for, both indoors and outdoors. Many individuals spend the majority of their days inside; so indoor air quality is a major concern. Studies have shown that indoor air often contains high levels of contamination. If everything that has breath is truly to praise the Lord, then we must work to keep indoor air to be healthy air.

The Ecological Problem

Rising energy costs over the past several decades have led to increasing efforts to save energy by plugging leaky buildings. The problem with "tight," energy-efficient, buildings is that they do not breath freely. During our own respiration process we exhale carbon dioxide, which allows us then to take in our next lungful of nourishing oxygen. If our airways become constricted, such as during an asthma attack, we can neither take in the amount of oxygen we need nor get rid of all of the waste carbon dioxide. As we have tightened our buildings, oxygen in the outdoor air has not been able to get in as well as needed. Also, fumes from paints, furniture, cleaning products, and other materials have been left to collect inside.

> According to research conducted by the EPA, the air inside the average home is typically 2-5 times more polluted than the air just outside its walls. One five-year study found that the levels of certain chemicals in many homes were 70 times higher than they were outdoors. Another study examining indoor air quality in six cities discovered that peak concentrations of 20 toxic chemicals were a remarkable 200-500 times higher inside than the highest concentrations recorded outside. When the Consumer Products Safety Commission studied air pollution, it found that outdoor air contained an average of less than 10 volatile organic compounds (or VOCs-a type of airborne pollutant) while indoor air contained approximately 150.[1]

1. Environmental Protection Agency, Office of Air and Radiation, Indoor Environments Division; *House Dangerous: Indoor Air Pollution in Your Home and Office*, Ellen Greenfield, Interlink Books, 1991[68]

A number of well-identified illnesses, such as Legionnaire's disease, asthma, hypersensitivity pneumonitis, and humidifier fever, have been directly traced to specific building problems. These are called building-related illnesses.

The three major reasons for poor indoor air quality in office buildings are: the presence of air pollution sources in the building; the building's ventilation system is poorly designed, maintained, or operated; and uses of the building that were unanticipated or poorly planned for when the building was designed or renovated. There are a variety of pollutant sources that affect indoor air quality. Indoor air pollutants can be found in carpets, insulation, building materials, fabrics, heating sources, cleaning products, and furniture. Indoor air quality is also decreased by weak ventilation systems. Many pollutants are a danger both to the earth and to personal health. Left unchanged, churches, homes, and businesses with low indoor air quality can very adversely affect individual health concerns. Indoor air toxins can lead to allergies, asthma, lung concerns, irritation to the eyes, nose, and throat, and a variety of other illnesses.

Human Justice Issues at Stake

Indoor air pollution adversely affects the health of individuals from all socio-economic backgrounds. Yet, it is important to note that indoor air quality has a more negative impact on the health and lifestyles of poorer individuals. Low-cost housing as well as offices and churches in poverty-stricken areas are often made with less expensive carpets, paints, building materials, and fabrics, which are usually made of materials that adversely affect indoor air quality. Those who inhabit older, lower-priced, homes are left to deal with the consequences from the deteriorating lead paint and asbestos insulation and siding used by previous owners. In addition, individuals at the margins are generally less likely to have the money and resources to remove air pollution hazards and remodel using ecologically-friendly materials. As a Christian community, we are called to work for clean indoor air for all individuals, regardless of their circumstances.

What To Do as a Congregation

As a congregation you can eliminate sources of indoor air pollution and educate members and the community to do the same. You can use every decision and every change at the congregational level as an opportunity to educate members to practices for their homes.

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[68] Seventh Generation. "Household Hazards: Hidden Toxins in the Home: Home Furnishings and Air Quality." Found at the URL: http://www.seventhgeneration.com/household_hazards/toxins_home/home_furnishings.html when accessed on May 5, 2006.

- Some common indoor air pollutants and possible solutions include the following:
  - Asbestos
    - Asbestos is a mineral fiber that is found in a variety of building materials. It is most commonly found in older homes and buildings. Asbestos exposure can lead to lung cancer. Materials containing asbestos that are in good condition are not regularly a threat. It is when these materials are ripped or damaged that the real danger for asbestos inhalation arises.
    - In order to clean up asbestos, professional help is necessary.
  - Biological Contaminants
    - Mold, mildew, bacteria, and dust mites are all examples of biological contaminants. These various pollutants can lead to a variety of allergic reactions, asthma, and respiratory concerns.
    - Moisture control is a major key to fighting mold and mildew. Water-damaged materials must be dried and cleaned within 24 hours or otherwise replaced. Investing in an air purification system, and its need for regular maintenance, is also a good option. Regular cleaning of carpets, upholsteries, and other fabrics is the main line of defense against dusts mites and other parasites and bacteria. Avoid carpeting, because it can harbor microbes; conventional vacuum cleaners blow dust into the air; and shampooing can increase microbe levels.
  - Formaldehyde
    - Formaldehyde is used in a variety of building materials and cleaning products. Pressed wood products like particleboard and plywood are main sources of formaldehyde emissions. Formaldehyde can trigger asthma attacks and a variety of other allergic reactions.
    - The best way to avoid formaldehyde in the air is to avoid installing products containing formaldehyde. In occupied spaces, avoid particle board/fiberboard products utilizing urea-formaldehyde (U-F) resins. Products containing phenol-formaldehyde (P-F) resins can be used in the building, unless they are near areas frequented by sensitive individuals.
  - Lead
    - Exposure to lead is a major health threat. Lead can be found in old paint. Before the dangers of lead were realized, lead-based paints were quite common. Exposure to lead can adversely affect nearly all parts of the human body. Lead is particularly dangerous to children. Lead in paint becomes increasingly dangerous as the paint deteriorates and turns to dust. This dust can then be inhaled.
    - Reducing lead exposure can be accomplished through proper paint removal, aided by professionals as necessary.
  - Radon
    - Radon is a radioactive gas that most commonly enters a building through the dirt or rock on which the building is built. Lung cancer risks are greatly increased through repeated exposure to radon.

- The best way to find out if your church, home, or office is contaminated with radon is through a simple test that can be bought at most hardware stores and sent to a laboratory for analysis. If a building does show radon contamination, then a contractor should be hired to suggest ways to improve ground/floor level ventilation that will help eliminate the problem.

◊ Volatile Organic Compounds (VOCs)

- Volatile organic compounds are a variety of gases emitted from many cleaning products, furnishings, fabrics, carpets, and paints. Indoor concentrations of VOCs can be up to ten times greater than the levels found outdoors and can cause headaches; nausea; eye, nose, and throat irritation; loss of coordination; and liver, kidney, or nervous system damage. Some VOCs are suspected or known to cause cancer in humans and other animals.
- The main line of defense against the release of VOCs indoors is to make an effort to purchase products that are known to have low levels of these compounds. Use low-VOC paints and stains (Benjamin Moore Eco Spec is one such product) and avoid using spray paint altogether. Avoid particle board/fiberboard products containing adhesives with high VOC concentrations Avoid carpeting; new synthetic carpets outgas many VOCs that then linger in the building.

♦ To reduce the impact of indoor air pollutants, circulate fresh air through your house as often as possible. This, of course, reduces the energy efficiency of your building during peaking heating and cooling seasons and is a good reason to use the most moderate temperature setting possible on your heating and cooling system.

♦ Invest in quality paints, stains, and varnishes. Many people are under the impression that once these products dry, they no longer pose a threat. This is incorrect. All three can emit a variety of harmful chemicals. It is best to look for paints, stains, and varnishes that are low in Volatile organic compounds (VOCs). Definitely be aware of the types of surfaces you are working with. If lead-based paint has previously been used on the type of surface you are remodeling, a professional will need to be consulted and specific measures will need to be taken.

♦ Most carpeting is made with synthetic materials that emit dangerous gases long after the carpet has been installed. Wool carpeting is a good alternative. Wool carpeting has the advantages of being made from a renewable material; it is long-lasting; and it is easy to clean (using warm water). Other non-carpet flooring alternatives include bamboo, certified wood, and recycled tile.

♦ Draperies and upholsteries are another means through which indoor air quality can be diminished. When replacing or purchasing bedding, draperies, or upholsteries it is beneficial to choose items that are made with unbleached 100% organic cotton. It is also useful to choose items that do not use harsh dyes.

- Indoor plants are a great way to merge the outdoor world with the indoor world. Not only do they add beauty, they also help to clean the air by removing some toxic chemicals and increasing indoor oxygen levels. Any type of houseplant is beneficial. Types of plants that are particularly good at cleaning the air include palms, vines, and ivies.

- Windows, like plants, are also a way to bring creation inside. In addition, having functional windows that open and close is key to an inexpensive means of increasing air circulation. Any new building project should take care to include plenty of windows when possible.

- Many types of air purifiers are currently on the market. Purifiers utilizing HEPA filter technology are currently thought to be some of the best on the market. Avoid ozone producing air purifiers. Ozone can damage lung tissue; even though it is beneficial in the upper atmosphere, where it protects us from cancer causing ultraviolet (UV) light, you do not need it in your living space.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into our everyday life. You can educate yourselves and your neighbors about indoor air quality and the ways to improve it in your homes. Educating your children is one of the first steps you can take to making the world better for future generations.

- To improve indoor air quality at home you can follow the guidelines for congregations at home.

Resources

Websites

- http://www.healthyindoorair.org: Healthy Indoor Air for America's Homes is a joint program of EPA's Indoor Environments Division, Montana State University Extension Service, and the USDA Cooperative State Research, Education and Extension Service. The site includes instructional modules from a complete online training manual on indoor air quality (IAQ). The site also includes information for homeowners on specific indoor pollutants. It was developed to provide basic but comprehensive information to consumers on improving IAQ in their homes. The goal of the Program is to educate consumers about sources, health risks, and control measures related to common residential indoor air problems and to help consumers reduce their health risks from these problems.

- http://epa.gov/iaq/is-imprv.html: This page from the EPA website outlines the three basic strategies for improving indoor air quality; source control, improving ventilation, and installing an air cleaner. More comprehensive information can be found in EPA's 32 page booklet, "The Inside Story: A Guide to Indoor Air Quality," found on line at

the URL: http://epa.gov/iaq/pubs/insidest.html. You can also download the booklet in PDF form from this location. For some of the issues specific to non-residential buildings see "An Office Building Occupant's Guide to Indoor Air Quality" found at the URL: http://www.epa.gov/iaq/pubs/occupgd.html.

- http://www.healthhouse.org/index.asp: Health House program of the American Lung Association has information on residential indoor air quality. An online 22 point checklist is available at the URL: http://www.healthhouse.org/iaq/checklist.asp provides simple ways to improve your home's indoor air quality. They also identify several potential trouble spots in the home, what the pollutants and health effects are, as well as the steps to take to correct the problem. This can be found at the URL: http://www.healthhouse.org/IAQ/HomePollutants.asp.

- http://www.cpsc.gov/cpscpub/pubs/iaq.html: The Consumer Products Safety Commission has several publications available online that relate to indoor air quality. The material covers asbestos, carbon monoxide, formaldehyde, paint, and several other topics.

- http://www.greenseal.org/certproducts.htm: The Green Seal list of products for which the manufacturer has obtained certification. Green Seal also makes product recommendations based upon their investigation of particular market sectors. The recommendation process is not as rigorous as the certification process; nevertheless, the specific manufacturers do not seek out this endorsement by Green Seal, and Green Seal is not compensated for making any specific product recommendations. These recommendations can be found at the URL: http://www.greenseal.org/recommendations.htm.

Bulletin/Newsletter Green Notes

It is very valuable to promote in your newsletter the choices the congregation makes in regards to improvements in indoor air quality. In this way, the congregation can serve as an example for parishioners. If congregation members see positive improvements in the air quality within their church, they are more likely to work on improving the air quality in their homes and workplaces.

Section 10: Nature Inside, and Out

For you shall go out in joy,
and be led back in peace;
the mountains and the hills before you
shall burst into song,
and all the trees of the field shall clap their hands.
Instead of the thorn shall come up the cypress;
instead of the brier shall come up the myrtle;
and it shall be to the Lord for a memorial,
for an everlasting sign that shall not be cut off. (Isaiah 55:12-13)

So Abram moved his tent, and came and settled by the oaks of Mamre, which are at Hebron; and there he built an altar to the Lord. (Genesis 13:18)

He brought me, in visions of God, to the land of Israel, and set me down upon a very high mountain, on which was a structure like a city to the south. … The recesses and their pilasters had windows, with shutters on the inside of the gateway all around, and the vestibules also had windows on the inside all around; and on the pilasters were palm tress. (Ezekiel 40: 2, 16)

The righteous flourish like the palm tree,
and grow like a cedar in Lebanon.
They are planted in the house of the Lord;
they flourish in the courts of our God. (Psalm 92: 12-13)

Then the angel showed me the river of the water of life, bright as crystal, flowing from the throne of God and of the Lamb through the middle of the street of the city. On either side of the river is the tree of life with its twelve kinds of fruit, producing its fruit each month; and the leaves of the tree are for the healing of the nations. (Revelation 22:1-2)

Theological Reflections

God made all the earth good—people animals and plants. All aspects of creation have their own intrinsic value and their own way to praise God; as the hymn says, the hills sing and trees clap for joy to God. There were trees at one of Abram's first spots for worshiping God, Ezekiel's vision included palm trees, and we too need to allow the rest of God's creation to worship along with us.

A good reason for including plants in the sanctuary is to remind us of all of the metaphors for life that they represent in the Bible. The tall trees within our midst recall our desire to remain in a right relationship with God—it is those who are righteous that cling to the Lord, and grow to be the giants in faith. And it is the tree that nourishes the faithful in John's Revelation as they bask in the presence of Jesus, the Lamb, in the City of God.

The Ecological Problem

Through the years we have built walls and closed ourselves off from nature, often because we have felt threatened by nature. What we have really done has been to separate and ostracize ourselves from nature; we have broken the link between us and nature and forgotten that the earth is a mutually dependent, interconnected community of living organisms relying upon one another for life and survival. As we have built walls and shut out the "out-of-doors" we have shut ourselves off from the plants that keep us alive and help keep us healthy. Plants use the waste carbon dioxide from our lungs and change it into oxygen. In this way plants and humans need each to continue living. Through their own respiration process, plants clean the air for us by absorbing dangerous toxins. They also moderate water vapor and humidity to keep these at comfortable levels and to capture sound, reducing noise levels—thus lowering stress levels. Bringing plants inside helps to keep the indoor environment healthy, safe, comfortable, and life giving in so many different ways.

Human Justice Issues at Stake

Green spaces are places for breaks. They offer the opportunity to stop or pause for relaxation and rejuvenation. Even a courtyard with a couple of shade trees is helpful. Add a bench and some flowers and it becomes a destination to enjoy. Green space is also a haven from the noise, clutter, and bustle of modern life. It is often the most lacking in the inner city and can become a mission for urban congregations to provide—whether outdoor green space, or indoor. Green space can provide a place to find meaning, or purpose, in an otherwise bleak or hurried life. They are places of inspiration away from the rush of the moment. And they provide a connection to the rest of creation amongst all of the concrete and steel in our lives.

What To Do as a Congregation

As a congregation you can grow more plants on your property and in your building to foster a greater awareness of our dependence upon the rest of creation for the continued sustenance of our lives. You can use every decision and every change as an opportunity to educate members to practices for their homes.

- Bring living plants into the worship and office spaces. Think about how plants, or even small trees, can enhance your facility and worship experience if placed:
  - near the altar
  - near the baptismal font
  - near doorways to provide a living transition between the inside and outside—especially if the same plant is used both indoors and outdoors
  - in the narthex and other gathering spaces
  - in the office reception area to enhance the space's hospitality
  - in offices and staff workrooms
  - in classrooms

- Bring other life into the church—an aquarium, hamsters, birds.

- Create an outdoor worship or prayer space—possibly place a labyrinth in garden space on the church grounds. Can a water garden with running water help provide a soothing background and mask noise from beyond the space?

- Can ivies and other climbers blur the boundary between in and out by softening the edges of your facility's hardscape, even indoors?

- Consider the color, shape, and form of plants. How do they complement and contrast with one another? Can some be flowering and fragrant to add another of the senses to the experience?

- Have the children plant a garden. Using daffodil bulbs in the fall placed in the shape of a cross allows them the joy of seeing the cross bloom in the spring. Grow flowers or other plants that may be placed on the altar.

- Consider using plants mentioned in the Bible. A useful list can be found on the Old Dominion University website at the URL: http://www.odu.edu/webroot/instr/sci/plant.nsf/pages/bible. Label them not only with their common and scientific names but also with the verses from the Bible where they are mentioned. However, watch out for species that may become invasive in your climate and particularly of wormwood—it is hazardous when ingested.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into everyday life. You can educate yourselves and your neighbors about increasing the number and variety of plants in and around your home. Educating your children is one of the first steps you can take to making the world better for future generations.

- Open your windows as often as you can. It helps you enjoy nature. Turning off the air conditioner also saves the environment and you some money (see our section on energy use).

- Create an indoor herb garden. Not only does it bring plants into the kitchen but it also adds flavor to the foods you prepare!

- Plant a tree. Plant a garden. Put a potted plant in every room. Get a small waterfall/water fountain to put on a wall or tabletop.

- Make the most of your outdoor surroundings. Find your favorite sunny or shady spot and put out a chair. Enjoy a moment with nature.

- Take a walk in the park. Regularly spend time at a park. Beside the benefit of the exercise "take time to smell the roses"—notice your surroundings—there is a lot of creation to see, hear, and smell that is good (and good for you).

- Adopt a pet. Pets reduce stress and improve health and are a reminder of nature.

Resources

Websites

- http://pss.uvm.edu/ppp/pubs/oh82stress.htm: The University of Vermont Extension Service offers a few tips for designing a stress reducing garden.

- http://hgic.clemson.edu: The Clemson Extension Service Home and Garden Information Center provides helps on caring for indoor plants.

- http://www.organicgardening.com: The website for Rodale, Inc.'s Organic Gardening Magazine.

- http://www.epa.gov/iaq/: Environmental Protection Agency website on indoor air quality.

- http://www.blankees.com/house/plants/: A website with a list of plants that are good for cleaning the air. It also lists which ones are poisonous, important information for those with young children or older people who may be confused.

- http://www.annieappleseedproject.org/plancleanina.html: Information on plants that effectively clean the air originally from the Non-Toxic Times and reprinted on the Annieappleseedproject website.

Books and Articles

Wolverton, B. C. 1997. *How to Grow Fresh Air: 50 House Plants that Purify Your Home or Office*. New York: Penguin.

Activities

Get the youth to start seedlings as a winter project and sell them in the spring or transplant them to places around the church and neighborhood. Use organic methods. Herbs are particularly attractive and healthy.

Bulletin/Newsletter Green Notes

Provide guidance for members on how to start a herb garden.

Section 11: Recycling and Waste

God saw everything he had made, and indeed, it was very good. (Genesis 1:31a)

The Lord God took the man and put him in the garden of Eden to serve it and preserve it. (Genesis 2:15)

You shall not defile the land in which you live, in which I also dwell. (Numbers 35:34a)

I brought you into a plentiful land
to eat its fruits and its good things.
But when you entered you defiled my land,
and made my heritage an abomination. (Jeremiah 2:7)

Many Shepherds have destroyed my vineyard,
they have trampled down my portion,
they have made my pleasant portion
a desolate wilderness.
They have made it a desolation;
desolate, it mourns to me.
The whole land is made desolate,
but no one lays it to heart. (Jeremiah 12:10-11)

He turns rivers into a desert,
springs of water into thirsty ground,
a fruitful land into a salty waste,
because of the wickedness of its inhabitants. (Psalm 107:33-34)

The earth dries up and withers,
the world languishes and withers;
the heavens languish together with the earth.
The earth lies polluted
under its inhabitants;
for they have transgressed laws,
violated statutes,
broken the everlasting covenant.
Therefore a curse devours the earth,
and its inhabitants suffer for their guilt;
therefore the inhabitants of the earth dwindled,
and few people are left. …
The city of chaos is broken down,
every house is shut up so that no one can enter. …
Desolation is left in the city,
the gates are battered into ruins. (Isaiah 24:4-6, 10, 12)

Theological Reflections

God has called humanity to care for all of God's good creation; the land, sky, waters, and all the other life that earth, this good garden, holds. We must not defile and pollute creation, our heritage from God, or we will no longer be able to inhabit it; even our cities will lie in ruins, overwhelmed by pollution. To keep this from happening we must look for ways to limit the amount of waste that we discard into creation and find ways to recycle and reuse those items that have reached the end of their useful life as they are currently fashioned.

The Ecological Problem

We all throw things away. We toss stuff out at home, work, school, and play at the rate of 4.5 pounds every day. This is up from the 3.7 pounds per day tossed out in 1980, 3.3 pounds per day in 1970, and 2.7 pounds per day in 1960. Each of us throws away a lot of "everyday" items every day; adding up to over 1600 pounds each year.

Waste	Percentage in waste	Pounds per person per day	Pounds per person per year	
paper	35	1.6	570	Mostly from disposable items and product packaging. Nearly all of which contains ink, dyes, or a coating; it is not just processed wood pulp.
yard waste	12	.54	200	Grass clippings and branches.
food	12	.54	190	What we prepare and do not eat as well as from spoilage.
plastic	11	.50	180	Again, mostly packaging and disposable items.
steel	6	.27	96	Mostly from large household items but 1/4 is from steel cans.
wood products	6	.27	94	From wooden crates and discarded furniture.
glass	5	.23	86	Mostly glass bottles, but some is from broken widow panes, mirrors, and other household items.
textiles	5	.23	73	Clothing and household furnishings.
rubber and leather	3	.14	47	Clothing and household furnishings.
aluminum	1	.05	22	About 2/3 is from aluminum cans.
other metals	1	.05	11	Such as lead, cadmium, and nickel from batteries.
miscellaneous	3	.14	55	

Not only are we each generating more garbage each day than we did in 1960, there are also more of us who are producing this waste. So, taken together, more people producing more

garbage means that Americans produced over 236 million tons of waste in 2003, nearly 270% more than the 88 million tons of garbage we generated in 1960. Over half of this trash ends up in landfills. The rest is recycled, burned, or composted.[69]

Sending it away. If we ship our trash elsewhere it simply becomes "someone else's problem." However, the global ecosystem is all interrelated and "someone else" often ends up being "us" as well, if simply because someone else sends the trash back to us. How often do we hear of garbage-laden barges being refused entry at their destination because someone else does not want our load of trash? Even if our trash is accepted at its destination, we may unexpectedly find ourselves dealing with unanticipated side effects of our decision to send it away when it is handled in a poor manner at the destination. For example, when mercury-containing waste is inexpertly burned, the mercury will end up in the atmosphere and then back in fish and other animals that we eat once the wind blows the mercury back to us. So shipping it out is not a real solution to our waste disposal problem; it only adds to the problem.

Burning it. Another option to get rid of our trash is to burn it. How much yard waste—grass clippings, branches, etc.—has been burned through the years? In 1960 some 30% of our waste was burned, usually by piling it up, setting it on fire, and letting the smoke billow up, carrying the ash away on the wind. Now we realize that such methods spread toxic material from the fire wherever the wind blows it. So we must be much more careful in the methods we use to burn our waste. Incinerators and furnaces connected to pollution control devices can be used to burn waste, and these limit greatly the amount of air pollution produced. However, these can be expensive to build and operate, and only 14% of waste is now burned in this fashion.[70] Nor is burning a cure-all to the problem of waste. Up to 30% of the original amount of waste remains after burning it in an incinerator, and some of this is highly toxic material containing dioxins, mercury, lead, cadmium, cyanide, arsenic, selenium, and nickel that requires special disposal. Incineration concentrates these toxic materials in our waste to the point that they become extremely hazardous to us and to the environment.

Burying it. The most common solution we take to our garbage problem is to bury it. In the past this meant finding or making a low spot in the ground dumping the trash in and then covering it up with a little bit of dirt. Nothing separated the trash from the earth, which meant that toxic materials such as lead and cadmium (from batteries), bisphenol (a compound from plastics that mimics hormones), as well as benzene and chromium (both carcinogens) quickly contaminate the soil and groundwater—once microorganisms free

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[69] U.S. Environmental Protection Agency. 2003. *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2003*. Found at the URL: http://www.epa.gov/msw/msw99.htm when accessed on September 5, 2006.

[70] U.S. Environmental Protection Agency. 2003. *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2003*. Found at the URL: http://www.epa.gov/msw/msw99.htm when accessed on September 5, 2006.

them from the materials into which they have been incorporated. Modern landfills are designed to prevent this quick movement of contaminants with the use of landfill liners—plastic, clay, and/or both—that catch the toxins and prevent their migration from the site. However, this is only a partial fix to the trash problem.

The contaminants that were formerly carried away from the landfill along with the groundwater are now held back by the liner because the rain that now falls on the landfill cannot leave the landfill. Unless this toxin-containing rainwater is pumped out of the landfill and treated, the water will accumulate inside the landfill and eventually spill over the sides of the liner (like an overflowing bathtub) and the ground will become contaminated. So the landfill works as long as the toxic water can be pumped out and properly treated. However, the tons of trash in the landfill can sometimes crush the pipes carrying the water, causing this control system to breakdown and the landfill to leak toxic material.

The landfill also will leak toxic material when the liner fails. Should the liner ever develop a crack or hole the landfill will leak. This is something that *will* happen with time as the chemicals in the landfill attack the liner and cause plastic liners to become brittle and crack. Or the chemicals will slowly penetrate clay liners until they eventually break through and move into the soil and groundwater beyond it. Even the EPA recognizes that this will happen eventually:

> Even the best liner and leachate collection system will ultimately fail due to natural deterioration, and recent improvements in M[unicipal]S[olid]W[aste]L[and]F[ill] containment technologies suggest that releases may be delayed by many decades at some landfills. For this reason, the Agency is concerned that while corrective action may have already been triggered at many facilities, 30 years may be insufficient to detect releases at other landfills.[71]

All landfills are environmental time bombs waiting to go off. Some are on short fuses while others are on longer fuses, often waiting until they are forgotten about; forgotten about, that is, until someone gets sick from what has leaked out of them. And then who will pay for the treatment and clean up of the landfill when toxins leak from it 30 or 50 years after the last bit of trash was placed in it?

Landfilling is only a temporary solution to the waste problem, albeit one with long-delayed consequences; but it is still temporary since all landfills will eventually leak. The only way to limit this future problem is to minimize the amount of trash that we throw away. By creating less garbage there is less for us to bury or burn (burying the resulting ash), and future generations will have to deal with fewer effects from our waste legacy.

Recycling it. The good news is that we are recycling and composting more than ever before. Recycling, taking useful material out of the trash and reusing it to make a new

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[71] U.S. Environmental Protection Agency. August 30, 1988. *Federal Register*. Vol. 53, No. 168.

product, currently removes 23% of material from our waste stream. Composting converts organic matter, primarily yard waste that we throw away, into useful landscaping material, taking another 7% of material out of the waste stream. However, even after taking out 30% of what we currently throw away, over 160 million tons of trash still end up in landfills or being burned, twice as much as in 1960.[72] We can do more!

Create less of it. Germans and Swedes produced only 2 pounds per person per day of trash in 2003. If Americans did this they would have generated 129.88 million tons of waste, only 21% more total trash than they created in 1960. (Something that could have been pretty amazing since there are 62% more Americans than there were in 1960.) If present day Germans and Swedes can live lives that produce this little trash, we can find ways to do this as well. However, to do so we must think and act differently than we currently do, or even differently than we did in 1960 when each American produced 2.68 pounds of waste each day.[73] There are ways to live that produce less trash than we are currently doing now, ways that do not impact our standard of living. In fact, simply producing less waste can be viewed as a way to improve our standard of living since there would be fewer smelly garbage trucks on the road and fewer and smaller landfills and incinerators to live with.

Human Justice Issues at Stake

Discarded waste affects someone. It does not just go out the door into the garbage bin and then disappear. The trash truck picks it up and takes it someplace, generally to a landfill or incinerator and people live near these facilities, usually the poor and people of color—those with less power. These marginalized individuals are the ones who are the most affected by our waste and the toxins created by our waste.

It is not right that the least powerful and most vulnerable members of society, the old, the young, and the ill, amongst our poor and disenfranchised end up bearing the greatest effects from our waste disposal facilities. Since no pollution controls are 100% effective, every incinerator sends some toxins into the air, the effects of which build up over a lifetime, exacerbating old-age infirmities. Small cracks and holes in landfill liners can go undetected for years until they have leaked large enough quantities of pollutants that someone takes notice. The toxic effects from these releases are acutely felt by the young as well. Infants, toddlers, and the unborn all take in much from their environment to feed their growth, and small doses of toxins can be much more detrimental to them than to grown adults. It is these who are least able to care for themselves who bear the burden from the contaminated air, water, and soil that results from sending millions of tons of waste to one

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[72] U.S. Environmental Protection Agency. 2003. *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2003*. Found at the URL: http://www.epa.gov/msw/msw99.htm when accessed on September 5, 2006.

[73] U.S. Environmental Protection Agency. 2003. *Municipal Solid Waste Generation, Recycling, and Disposal in the United States: Facts and Figures for 2003*. Found at the URL: http://www.epa.gov/msw/msw99.htm when accessed on September 5, 2006.

place. It is only just that we seek to minimize their burden by producing the smallest amount of waste that we can as well as to provide for their care when our waste sickens them.

What To Do as a Congregation

As a congregation, you can reduce the amount of waste that you produce as well as educating members and your community to do the same. You can use every decision and every change as an opportunity to educate members to practices for their homes.

Find out what you buy. The first step in reducing your waste is determining what waste you produce and how much of it that you generate. This does not mean that you have to overturn the garbage bins and see what is in them, a generally unpleasant task. You can start by simply taking a deliberate look at what you purchase. How many reams of paper do you buy? How much cleaner does the maintenance staff use to keep the church spotless? Does the worship staff use batteries in wireless microphones? How often does the maintenance staff need to replace batteries in flashlights, smoke alarms, and other equipment? The finance staff should have accounted for each purchase. Go through your congregation's purchasing records and tally up the stuff that was bought and then use your common sense to figure out where these items went. Are they still in use? Did all of these batteries end up in the trash, or does your congregation already have a recycling program for batteries? Paper might be a bit tricky but you can weigh all of the bulletins before giving them all out one Sunday and then weighing what ends up in the congregation's paper *recycling* bins; the rest will likely end up in the trash, either in one of the congregation's trash cans or at someone's home. (The trick to the process is to weigh the recycling bin when it is full and then weigh it again after you have emptied it to find out how much paper you just sent to the recycler, and then the task is neither dirty nor smelly.) Once you are aware of what and how much that you throw away, you can begin to figure out how to put less stuff in the trash, a process that starts when it comes time to make decisions about future purchases.

The best way to keep from throwing something away is to not buy it in the first place. Now that you know what you are buying, as well as how they are being used and disposed of, it is time to get creative and think of ways to do it with less, or at least in a way that creates less waste. Can a newsletter be sent electronically to members with email? Is there a central place that the staff can keep one or two flashlights?—four or five flashlights "stashed" in every corner of the church waste batteries that will likely end up in the landfill. And once you have reduced the number of batteries you need, consider purchasing rechargeable batteries for the few items that remain. Reducing your usage is the best way to keep trash out of your local incinerator and landfill.

A second, related issue to keep in mind when making purchases is the type and amount of packaging used to get the product to you. One-third of what we throw away is packaging material—mostly paper, plastic, and glass; but also wood, steel and aluminum. Almost everything we buy now comes wrapped in paper or plastic (even our produce gets carried home in paper or plastic bags) while glass, steel, and aluminum are used to bottle and can

our beverages and foods so that they can have long shelf lives. Look for products that come with the least amount of packaging since buying less packaging means that there is less of it to put in the trash.

Reuse your stuff. The next best way to keep things out of the trash is to find ways to reuse them. Things that you no longer use and are in good condition can be taken to a second-hand store so that others have the opportunity to reuse what you do not need. Stuff that has worn out or broken down can be sent to the repair shop to be refurbished. Encourage and patronize individuals and businesses that repair items. Much of society has become "disposable." We have forgotten how to be good stewards of our resources, because it is so much more convenient to throw out what does not work and buy something new.

Recycle it. When you *really* can no longer use or reuse something take it to someone who will recycle it—use its component material to create something new. This not only keeps old stuff from becoming waste and ending up in a landfill or incinerator, it also reduces the need to take "raw" material from the environment.

To get a reuse and recycling program started in your congregation you will need a coordinator or coordinating committee to organize and promote it (since ongoing communication is one of the most important aspects of a successful program). This coordinator needs to find out what can be recycled through regular (scheduled) or irregular (call for pick-up) pickups at your facility or at local drop-off facilities. They then need to decide:

- Which of these items to collect.
- How to collect them. (Can glass and plastic bottles and aluminum and steel cans be commingled?)
- Type and placement of containers throughout the building. (Each classroom might have a paper bin while one for beverage containers would be in the hallway and fellowship hall. The containers themselves can be as simple as cardboard boxes that would have otherwise been discarded.)
- How to promote your program. (Signs at collection points and on bulletin boards. Reminders in bulletins and newsletters to place them in the recycling bin when you are through using them. Periodically posting on bulletin boards or in newsletters information on the amount of "X" that has been collected as well as the amount of raw materials and energy saved and pollution prevented.)
- Monitoring the program. (How much is being collected? Would moving a collection point, or adding a new one, increase participation? Has collection increased to the point that you need more frequent pickups? Has congregational activities or local recycling options changed so that it is now viable to begin collecting another material?)
- Advocate for the program. (Promote member in-home recycling and encourage the congregation and its members to buy reused products as well as those containing

recycled material content—look for labels or ask your supplier for product recycled content information.)

For more detail on how to conduct a waste assessment, starting a waste reduction program, where in your area to take batteries, electronics/TVs/computers, motor oil, paint, and mercury-containing devices, what can be recycled through your community's curbside program, and helpful advise on starting a composting program, see the two Earth 911 websites: http://www.earth911.org and http://www.earth911business.org.

Some things to keep in mind when looking at your congregation's generation of waste and what you might do to reduce the amount of material sent to the incinerator and landfill:

Only half of people with curbside recycling use it. Ask your city officials for flyers to give to your members and others in the community to let them know what can be recycled and how to have the items prepared/packaged in the bins. If the city officials do not have flyers, ask them to print some—people will not recycle if they do not know what they can recycle. (Tell your city office to join the Curbside Value Partnership at Earth 911 for help in increasing curbside recycling.)

Paper, Glass, and Aluminum: Three staples of most curbside recycling programs. Recycling aluminum reduces air pollution emissions by 95%; and it is more energy-efficient (and cheaper) than using raw materials. This much sought commodity means that recycling aluminum is cheaper than putting it in the trash; yet only 1/2 of beverage cans (and even lesser amounts of aluminum foil and tins) are recycled. So much more can be done to increase aluminum recycling.

Americans throw away the equivalent of more than 30 million trees each year in newsprint alone. When you add writing paper and cardboard to this amount, that is a lot of trees indeed. Recycling paper reduces the amount of trees that need to be cut down and reduces air pollution emissions and energy consumption. (Less energy used means fewer greenhouse—global warming—gases produced, and more trees standing means more plant life to take in and retain these gases as well.) Paper comprises 40% of the material going to some landfills; so there is a lot of paper that is not yet being recycled.

Recycling glass reduces air pollution emissions up to 20%. Glass is the container of choice for many foods and beverages due to its inert qualities. Recycled clear glass can be a highly desired commodity since it can be so easily "contaminated" by bits of broken brown or green glass. Diligence in keeping these separate is helpful in maintaining a successful recycling program.

Yard and Food Waste: One-quarter of all municipal waste is organic matter. How much of your congregation's waste is comprised of this material will depend upon the size and layout of your property and the type and frequency of fellowship meals your congregation hosts. These factors will determine the size of the composting operation that you can maintain. But it is best to start small since successful composting requires some

attention—it must be "turned" periodically—so volunteers must be found to watch your compost so that it can be turned at the appropriate time. The Earth 911 website has some tips to help you get started at: http://www.earth911.org.

Styrofoam: Churches choose to use Styrofoam cups to serve coffee for a variety of reasons. They are convenient, they keep the coffee hot, and there are no cups to wash afterwards. Some congregations do not realize the damage done to the environment; others do not believe the damage is significant enough to worry about. However, this is not the case. The Styrofoam (polystyrene foam—a mixture of air and the plastic polystyrene) that is being discarded each week is a big deal. According to *The Recycler's Handbook* Americans use more than 25 billion polystyrene foam cups each year (that is 85 cups for each and every person). If 200 people came to church and used a single Styrofoam cup each Sunday, (200 people times 52 weeks per year = 10,400 cups) they would use and throw away enough cups to fill 30 32-gallon trash cans. Since there is not a practical way to recycle Styrofoam every cup must be hauled to the landfill, where its component chemicals will eventually leach out and become a potential problem for future generations.

In general, most Styrofoam cups become trash. There are attempts at recycling polystyrene foam but, unfortunately, recycling Styrofoam is quite difficult and only a few facilities are capable of the process. Not only is it hard to find a place to recycle your Styrofoam, the recycled product is also not suitable for making more cups. Therefore "recycling" your Styrofoam cup does not reduce the amount of raw material needed to make your next polystyrene cup, and there are very few uses for recycled polystyrene.

When we throw these cups away, the styrene (also called vinyl benzene) ends up in the landfill where it becomes a source for the benzene that ends up contaminating the soil and groundwater. If the effects from all of these Styrofoam cups end up being concentrated at the landfill, the negative effects on the environment actually begin from the moment that they are manufactured. Polystyrene foam is made from benzene. Benzene, a known carcinogen, is converted to styrene, polymerized, and finally injected with gases in order to produce the foam-like product. The gases are either HCFC-22, which contributes to the destruction of the ozone layer, or pentane, a source of smog.[74] And benzene itself is made from oil, and sometimes coal, in complex processing plants that create additional pollution and that consume more oil to power the production process.

Ceramic mugs and glasses are reusable containers that are good alternatives Styrofoam for holding hot and cold beverages at congregational events. They are much more durable than Styrofoam and are highly "reusable," the second-best way (after reducing usage) to lowering the amount of trash we send to landfills and incinerators.

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[74] The EarthWorks Group. 1990. *The Recycler's Handbook: Simple Things You Can Do.* Berkeley: EarthWorks.

Batteries: We live in a portable world. Music players, telephones, and computers are all portable and "unplugged," not to mention the innumerable toys and games, PDAs and calculators for we use at play and work. All of these items are powered by one form of battery or another.

Battery	Uses	
alkaline	One form of the common household battery.	Mercury levels in batteries manufactured after 1984 have been declining to roughly 10% of old levels. But look for those with zero-added mercury, or, better yet, for the less-toxic carbon-zinc form of the household battery.
nickel-cadmium (NiCd)	Used in all-purpose rechargeable batteries.	The cadmium in these batteries is hazardous and MUST be recycled. The nickel is less-toxic but still can be a problem.
nickel metal hydride (NiMH)	Used in laptop computers.	These can be recycled.
lithium ion	Also used in laptop computers.	These can be recycled.
button cell	Used in watches, calculators, and hearing aids.	Both the mercury and silver in these batteries is environmentally toxic.
lead acid	Automotive batteries, and other uses.	These need to be professionally recycled since they contain both lead and a strong acid.

All batteries have some form of toxic material in them, some (cadmium, lead, and mercury) are worse than others. All batteries can be recycled to recover their metal content. One company that will provide you with a container to ship used batteries to them is Battery Solutions (found at the URL: http://www.batteryrecycling.com). Check the Earth 911 website: http://www.earth911.org to see if there is a battery recycler in your area, or see the Rechargeable Battery Recycling Corporation website: http://www.rbrc.org to recycle your rechargeable NiCd, NiMH, lithium ion, and (non-automotive) lead batteries.

What To Do at Home

As Christians, what you do at church is not the only thing that matters. Each person can make a commitment to the earth that extends from the sanctuary into everyday life. You can educate yourselves and your neighbors about your community's recycling programs and those merchants offering repair and refurbishment services. You can reduce, or even eliminate, the use of disposable items in your home. Educating your children is one of the first steps you can take to making the world better for future generations.

Audit your purchases to see if you can reduce the amount of material that you buy. Less bought means less to throw away. Buy in bulk whenever possible since this will keep the amount of packaging material that you bring home to a minimum. See the "Green Shopping Tips" at the Earth 911 website: http://www.earth911.org for more details.

Find out what your community recycles, follow their guidelines, and use the program. Knowing what to recycle along with a little bit of effort in each home resulted, in some cases, in a 10-fold increase in the amount of material that each household recycled and a significant reduction in the amount of trash sent to the landfill or incinerator.

Other things to do include:

- Start recycling. Put a box(es) or bin(s) in your garage, basement, or mudroom to collect recyclable items then take them to the curb on recycling day. Get a container for batteries and collect discarded batteries until the container is full and then send them in to be recycled. Take your yard waste to the community reclamation yard or keep it in a pile until there is a pickup day. (Many communities will schedule one early in January to collect drying out trees and branches that had been used as Christmas time decorations.)

- Start a compost pile. It will create nutrients for your soil.

- Recycle your old batteries. See http://www.earth911.org, and http://www.rbrc.org, and http://www.batteryrecycling.com.

- Donate old cars and boats to charities. This can give you a tax deduction and they will refurbish the vehicle for reuse.

Resources

Websites

- http://www.earthresource.org/campaigns/capp/capp-styrofoam.html: Information on polystyrene foam from the Earth Resource Foundation's "Campaign Against the Plastic Plague."

- http://www.reduce.org: Minnesota Office of Environmental Assistance website with many helpful ideas on reducing waste in your lifestyle—including the use of composting.

- http://www.greenguardian.com: The Solid Waste Management Coordination Board for the Minneapolis/St. Paul area has helpful hints in reducing your waste. This site includes a helpful reduction checklist and even tells you how to recycle those pesky tyvek mailing envelops you may receive from the US postal service or overnight expediters.

- http://www.earth911.org and http://www.earth911business.org: The Earth 911 websites with tips on reducing your waste as well as tools for locating recycling programs in your area.

- http://www.rbrc.org: Rechargeable Battery Recycling Corporation will help you recycle your rechargeable NiCd, NiMH, lithium ion, and (non-automotive) lead batteries.

- http://www.batteryrecycling.com: Battery Solutions, Inc. will supply containers for collecting used batteries.

- http://www.newdream.org/tttoffline/index.php: The Center for a New American Dream's "Turn the Tide" program is a nine-step program involving simple lifestyle changes that impact the environment. The fourth step in this process is eliminating junk mail. By signing up for this program you can calculate the number of trees that do not have to be cut down and the amount of process water saved and the amount of greenhouse producing emissions that you and your congregation help to prevent by not receiving junk mail. This innovative web-based resource is easy to use and can really give members the sense that their actions are making a positive, measurable impact.

- http://www.reduce.org: The Minnesota Pollution Control Agency's waste reduction tips website.

Books and Articles

EarthWork Group. 1990. *The Recyclers Handbook: Simple Things You Can Do*. Berkeley: EarthWorks.

Swanson, John E. 1993. *What Did Noah Do About Trash? A Theology of Garbage*. Oregon: LOMC Publications.

Bulletin/Newsletter Green Notes

Highlight in the newsletter your recycling activities and whom in the community that congregation members can contact for adding their home to the program.