Eat What You Grow!

A School Garden Food Safety Manual for Chicago Public Schools

A Project by FamilyFarmed.org
in collaboration with
Academy for Global Citizenship,
The Chicago Botanic Garden,
and Chicago Public Schools

FamilyFarmed.org

Academy for Global Citizenship

CHICAGO PUBLIC SCHOOLS CPS

CHICAGO BOTANIC GARDEN

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Cover photo: Chicago Botanic Garden, Photo this page: Chicago Botanic Garden at Decatur School

Letter from the Mayor of Chicago

Dear Chicagoans,

The link between good eating and good health is clear. The Let's Move initiative is helping children across the nation embrace more physical activity and better nutrition. Here in Chicago we recognize that school gardens can support this initiative by offering students an opportunity for outdoor physical activity and nutrition education by teaching them how food is produced and where it comes from. These lessons not only nurture the body and mind but also set the foundation for academic achievement and success.

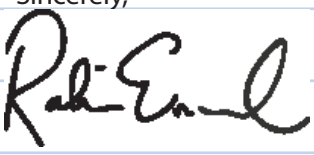
The City of Chicago is leading the way for a better future for our communities and our children's well-being by supporting the growth of school and community gardens throughout the city. Growing School Gardens, an initiative spearheaded by Chicago Public Schools and the City of Chicago, is working to develop active gardens in all Chicago Public Schools that will produce healthy food as well as provide a learning landscape for teachers and students.

Chicago Public Schools' foodservice provider now sources some of its produce from local farmers. Let's include another local component to the menu and offer the produce grown in the garden that is only a few steps away from the school cafeteria. There is nothing fresher than eating produce straight from the garden, and many school and community gardens in Chicago have the capacity to offer this food in school lunches.

Eat What You Grow!, an initiative developed by FamilyFarmed.org in partnership with the Academy for Global Citizenship, Chartwells-Thompson Hospitality, the Chicago Botanic Garden, Chicago Public Schools, with support from School Food FOCUS includes a comprehensive list of required food safety protocols for garden operators. By having a set of approved guidelines that all garden participants and foodservice staff implement, school gardens in our city can safely supply our school cafeterias with student and community grown produce and will assure school administrators, teachers, parents and students that the produce grown is handled with the utmost attention to safety.

As mayor of Chicago, I fully endorse the Eat What You Grow! Program. We are excited about the new possibilities in store for our city and will continue to support projects that are promoting a healthier future for Chicago.

Sincerely,



Mayor Rahm Emanuel

Photo: Chicago Botanic Garden at Gunsulus School

Acknowledgements

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Photo: Clayton Miller

Why Care About Food Safety in School Gardens?

School gardens have long been recognized as one of the most powerful teaching engines that schools can offer students of any age. Alice Waters' Edible Schoolyard has its roots in the mid-19th century practice that required school gardens throughout much of Europe. The importance of gardening for the education and social development of children was endorsed by America's most famous educator, John Dewey, and taken up nationally starting in the early 20th century.

School gardens are outdoor classrooms that connect children with nature and food. School gardens encourage healthy eating habits by bridging the gap between the soil and the lunch tray. For many children, gardens provide an opportunity for hands-on learning in math, science, literacy and creative arts. School gardens in particular can challenge a child's perception of vegetables and encourage them to make healthy choices.

The growing trend to bring healthier food into schools is coupled with the need to ensure that food grown on site is healthy and safe. Using the principles of Good Agricultural Practices (GAPs), which are guidelines that exist for production farms, and proper food handling procedures, this manual has been designed to provide safe oversights for school gardens.

From soil preparation to planting, harvesting and preparing the fresh fruits and vegetables, this manual guides the users through best practices to ensure a safe system. At each point in this system, students can learn valuable lessons that can be tied into curriculum and learning objectives.

Record keeping templates are included to help document trainings, harvesting activities, etc. In addition to addressing food safety risks, this manual encourages natural growing methods since growing organically helps minimize health risks and the impact on the environment.

How to Use this Manual

Developing a food safety program for your school garden may seem like an overwhelming task at first sight, but this manual is here to provide you the information you need to succeed in getting healthy produce into your school cafeteria.

This manual is broken down into five informative Process Areas that will give you the tools to understand good food safety practices and implement your program. The companion Food Safety Field Guides break down the tasks for each responsible party in your food safety team. In addition, there are Record Keeping Templates to help you document that you are implementing the program you've developed.

PROCESS AREAS

This manual is divided into five stages of the food safety process: Getting Started, Health and Hygiene, The Garden, Harvesting and Post-Harvest Handling, and Foodservice Handling. Each process area includes guidelines for safe growing and handling.

FOOD SAFETY FIELD GUIDES

Use the Food Safety Field Guides for handy checklists of food safety task responsibilities.

RECORD KEEPING TEMPLATES

It is important to keep records for the different steps in the process both as a checklist and an assurance that the proper precautions have been taken. Each process area includes form templates found in the appendix of this manual. These forms are intended to serve as templates to cover most of the documentation and record keeping that are part of a fresh produce food safety program. Not every size and type of school garden operation will need to use every form, but most operations will want to try and use the information these sheets are designed to document. It is expected that these sheets will serve as a foundation and inspiration for further customization. Don't be afraid to experiment to find out what works best for your school garden.

RESOURCES

There are additional resources at the end of the manual including a crop profile of common garden produce.

SECTION 1: Getting Started

This section will cover the following topics:

- Gain and Maintain Support
- Your Food Safety Team
- Food Safety Training
- Record Keeping

GAIN AND MAINTAIN SUPPORT

If you have started a school garden, you already know that it takes time, commitment, and support. Now, you have stepped up to the next challenge: GETTING THE SCHOOL GARDEN PRODUCE IN YOUR SCHOOL CAFETERIA!

In order to make this a reality, you will first need to gain support from key personnel at your school including the principal, your school engineers, teachers and foodservice staff. Once you have gained support, it is important to maintain support by forming a committed food safety team and developing a thoughtful food safety program. It is also important to communicate your food safety initiative with students and garden volunteers. Student and volunteer involvement is fundamental to sustaining your school's food safety program.

YOUR FOOD SAFETY TEAM

Who is responsible for food safety at your school garden?

The number of individuals who are responsible for food safety accountability depends on the size and manageability of your operation. Accountability can be with one person or a number of individuals with designated responsibilities[3]. For any school garden, it is very important that there be at least one person who is committed to that garden's food safety program. Below is an example of how your garden can assign food safety responsibilities.

Your Food Safety Team

Food Safety Manager

Garden Leader

Garden Participants

Kitchen Manager

Foodservice Staff

Photo: Chicago Botanic Garden at Cleveland School

Food Safety Manager

Your garden committee needs to select a food safety manager who oversees the entire food safety program ensuring that the food safety plan is properly implemented. School gardens are usually led by parents who are volunteering their time or teachers who already have an overwhelming work load; so, it is important to choose an individual who is committed to the garden's food safety program. In addition, the food safety manager must be a CPS employee. Throughout the manual, wherever you see Food Safety Manager, this denotes this role's responsibilities.

Below is a list of food safety manager responsibilities:

- Becomes trained in Good Agricultural Practices (GAP) pertaining to school gardens.
- Delegates and documents those responsible for each food safety risk area covered.
- Ensures Garden Leaders are thoroughly trained in food safety best practices.
- Oversees Garden Leaders to ensure food safety best practices are implemented.
- Communicates with the Kitchen Managers ensuring the food safety plan is properly implemented.
- Manages all garden related food safety documents and tracks any necessary updates.
- Ensures garden staff and garden participants are familiar with food safety protocols.

Garden Leader

The primary role of the Garden Leader(s) is to oversee the preparation and work in the garden. They need to be familiar with the food safety protocols outlined in the Food Safety Field Guide for Garden Leaders. Garden Leader(s) who are trained on food safety best practices must be on-site on harvest days. Throughout the manual, wherever you see Garden Leader, this denotes this role's responsibilities.

Below is a list of Garden Leader responsibilities:

- Becomes trained in Good Agricultural Practices (GAP) pertaining to school gardens.
- Ensures all Garden Participants are following food safety best practices.
- Completes any necessary food safety documentation (e.g., Harvest Activity Log, CPS Verify Incident Reporting System, etc.).
- Communicates with Food Safety Manager and Kitchen Manager.

Photo: Academy of Global Citizenship

Kitchen Manager

The Kitchen Manager must be trained in all foodservice food safety protocols including how to properly handle fresh produce. Throughout the manual, wherever you see Kitchen Manager, this denotes this role's responsibilities.

Below is a list of kitchen manager responsibilities:

- Ensures all foodservice staff implement food safety best practices.
- Communicates with the Food Safety Manager and Garden Leader(s).
- Completes all necessary food safety documentation.
- Manages all foodservice related food safety documents and tracks any necessary updates.

4 Appendix A – Food Safety Team Form

FOOD SAFETY TRAINING

The Food Safety Manager and Garden Leaders assigned to oversee CPS school gardens must participate in an approved training to ensure that they are familiar and comfortable with the protocols and expectations. The person assigned as your school garden's Food Safety Manager must undergo training conducted by the CPS Office of Student Health and Wellness and develop a personalized food safety plan to be kept on record and updated annually. The Kitchen Managers must have a valid Food Services Sanitation Manager Certification issued by the Illinois Department of Public Health and should receive and handle garden produce deliveries in the same manner as any other incoming product.

All trainings must be documented.

RECORD KEEPING

IF YOU DID NOT RECORD IT, YOU DID NOT DO IT!

Developing your garden's record keeping strategies will likely be the most time-consuming part of your food safety program and one of the most important. Keeping these records will act as a reminder and to-do list as well as an assurance the appropriate precautions have been taken, in the unlikely event that there is a food safety issue. It is recommended that all your documents are filed together in a food safety binder. The Food Safety Manager must ensure this binder is updated.

Here is a list of Good Food Safety Practices to keep in mind:[5]

- Documents, records, and policies should be included in your food safety files.
- All documents should be readily accessible for review/inspection and kept up-to-date. All documents should be kept for a minimum of four years. Please note that charter schools are not required to follow the Board document retention policy and can follow their own policies.

If you have questions concerning document disposal, please contact the Enterprise Records Manager. Susan Izban, 773-553-1679

- A self-audit of your food safety manual should be performed annually. The assigned Food Safety Manager should document that the audit was performed and record any corrective actions required. Appendix E (Food Safety Plan Review) can be used to record this information.

4 Appendix E – Food Safety Plan Review

Photo: Chicago Botanic Garden at Henson School

SECTION 2: Health and Hygiene

This section will cover the following topics:

- Hand Washing & Signage
- Participant Health
- Good Health & Hygiene Training

The health and hygiene of garden participants directly impacts the safety of produce grown and served from your school garden. Fruits and vegetables from your school garden will be harvested by hand; so, it is very important that garden participants know and understand that proper hygiene practices must be used in every process from working in the garden to harvesting produce.

HAND WASHING AND SIGNAGE

WHEN to Wash Your Hands[6]

- BEFORE working in the garden.
- BEFORE putting on gloves, and then again when changing them.
- BEFORE handling cleaning products.
- BEFORE cleaning and sanitizing tools.
- AFTER working in the garden.
- AFTER handling cleaning products.
- AFTER eating or drinking.
- AFTER taking a break.
- AFTER using the restroom.
- AFTER sneezing, coughing, blowing your nose, or using a tissue or handkerchief.
- AFTER touching your hair, face, body, or clothing.
- AFTER handling garbage.
- AFTER touching an open sore, cut, or pimple.

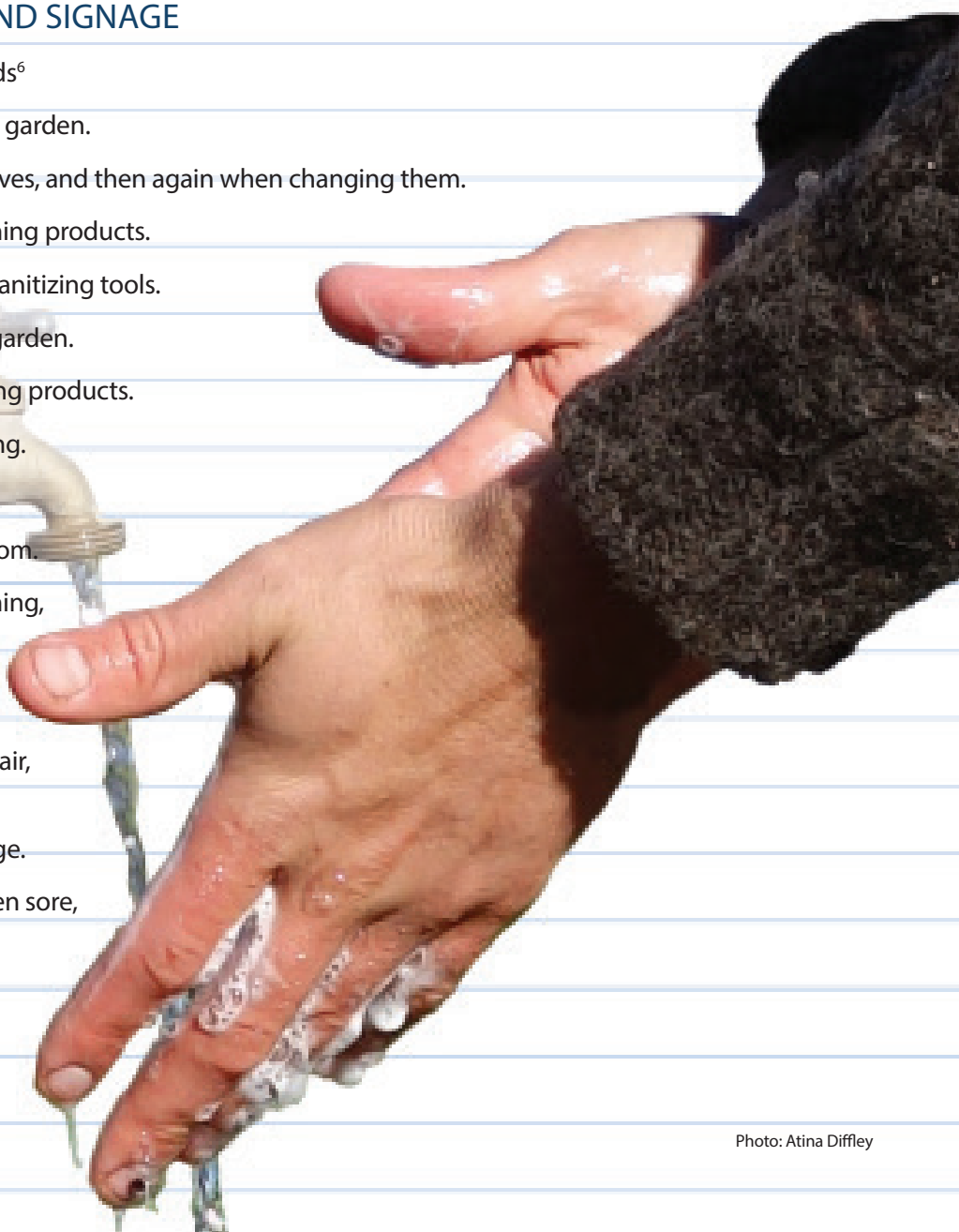

Photo: Atina Diffley

HOW to Properly Wash Your Hands[3]

1. Wet your hands with clean water (warm water is preferred if available), apply soap, and work up a lather.
2. Scrub your hands for at least 20 seconds. Don't forget to scrub under your fingernails and between your fingers. Rub fingertips of each hand in suds on palm of opposite hand. Wash your arms up to your elbows if exposed.

TIP: Sing "Happy Birthday" to yourself while scrubbing. It takes 20 seconds!

3. Rinse your hands and arms under clean water.
4. Dry your hands using single-use paper towels. Do NOT use a paper towel more than once or share towels with others.
5. When possible, turn off the faucet with the single-use towel instead of directly with your hand.
6. The garden leader should be notified if soap or paper towels need replenishing.

It is important that all participants are trained on the proper hand washing technique. Garden Leader(s) and the Food Safety Manager must ensure all Garden Participants are trained. The Harvest Activity Log in the appendix includes a column to check-off participants who have washed their hands before harvesting

4 Appendix C – Harvest Activity Log

Post good hygiene signage at all hand washing stations where they can be clearly read. Proper hand washing signs are available in the Appendix of this manual. It includes the above information as a reminder of proper hand washing techniques.

It is also recommended that your garden post a "good health and hygiene" sign at the entrance of the garden. It will remind garden participants and visitors that they must be aware of these practices.

4 Appendix H – Hand Washing Signage

4 Appendix I – Garden Rules Signage

Use of Hand Sanitizers

Hand sanitizers can be used in addition to good hand washing, but NOT as a substitute. Current research indicates that proper hand washing with soap and water is the most effective method of removing potential pathogens from the hands. Soil and dirt on hands may actually decrease hand sanitizer's effectiveness. Frequent use of hand sanitizers can also strip the outer layer of oil from hands, leading to cracking and dryness. This can then trap germs and bacteria.

PARTICIPANT HEALTH

Illness

Participant health can also affect produce safety. Be sure to verify that none of the garden participants are showing any signs of illness or have recently been ill. If a garden participant is ill, he or she cannot participate in the harvest. Garden Participants will only be allowed to help in the garden 48 hours after symptoms have ended. One exception is illness due to Norovirus, which has been found to be the leading cause of foodborne disease outbreaks in the United States. Norovirus is also commonly known as the stomach flu or viral gastroenteritis. In this case, participants will only be allowed to help in the garden 72 hours after symptoms have ended.

1. Garden Participants MUST notify the Garden Leader (or other person in charge) if they have any of the following symptoms or conditions. In these instances, participants will NOT handle fresh produce[3]:

- They have been diagnosed or were recently ill with a foodborne illness or communicable disease.
- They have an infected sore or cut that is open or draining on your hands, wrists, or the exposed areas of your arms.
- They are suspected of causing or being exposed to a foodborne illness outbreak.
- They live with a person diagnosed with a foodborne illness, or a person who attends or works where there is a foodborne illness outbreak.
- They have any of the following symptoms:
    - Diarrhea
    - Fever
    - Vomiting
    - Jaundice (a yellowing of the skin and eyes)
    - Sore throat with fever
    - Persistent sneezing, coughing, or a runny nose

Photo: Clayton Miller

2. Participants who have only mild symptoms but are still healthy enough to help with garden activities can participate where there is NO contact with produce. They must be appropriately covered with bandages and/or gloves to reduce the risk of contamination.

3. In the case the participant has mild symptoms and there are no tasks available where one can avoid contact with produce, then the participant will NOT be allowed to assist with garden duties.

Blood and Bodily Fluid[3]

If blood or bodily fluid ever comes in contact with the soil or produce, it must be immediately reported by whoever finds the contamination; however, if that person cannot immediately address the situation, the Garden Leader must take the appropriate action. If blood or bodily fluid is found on the soil, all contaminated surfaces must be removed into a plastic bag with a shovel or gloved hands and then placed in a waste basket. All affected soil will be shoveled up around and under the area and removed.

If a participant is bleeding, make sure they have been provided first aid or 911 has been called if it is a serious injury. All illnesses and injuries must be reported using the CPS Verify Incident Reporting System.

First Aid Procedures[3]

A first aid kit must be kept on site, or the Garden Leader must have one on hand. CPS Safety and Security have approved first aid kits available. Everyone should know the exact location of the first aid kit. Supplies should be checked and restocked on a regular basis. The first aid kit Inventory sheet found in the Appendix can help you keep track of first aid needs. Make sure to also check expiration dates and replace used or out-of date contents.

Dial 911 first for serious injuries and asthma or allergy related incidents. Have a list of emergency phone numbers available.

Cuts, abrasions and other injuries that occur at the garden site must be tended to immediately for the well-being of the participant and to minimize the risk of contamination to produce.

4 Appendix J – First Aid Kit Inventory

Photo: Chicago Botanic Garden at Murphy School

HEALTH & HYGIENE TRAINING

All Garden Participants must be trained on the above good health and hygiene practices before they can take part in garden activities. At the beginning of the garden season, schedule a training for garden participants. However, an effective health and hygiene program can only occur if these practices are continuously reinforced. Here is a review of the topics you will cover in your Health and Hygiene Training:

1. Proper hand washing techniques
2. Procedures in the event of participant illness or injury
3. Handling of blood and bodily fluid in the garden site
4. First aid procedures and identifying first aid kit location(s)

Here is a list of required Good Food Safety Practices[1]:

1. All Garden Participants must complete an annual training focused on good personal hygiene and daily hand washing.
2. The Food Safety Manager and Garden Leaders will maintain records assuring that all garden participants have completed a training session.
3. Hygiene signage is posted at all hand washing stations and includes clear instructions on when and how to properly wash hands.
4. All Garden Participants are required to report illness to the Garden Leader on duty.

4 Appendix D – Garden Food Safety Training Log

Photo: Chicago Botanic Garden

SECTION 3: The Garden

This section will cover the following topics:

- Siting and Soil
- Water Quality
- Grow Naturally
- Animal and Pest Control
- Risk Assessment

SITING AND SOIL

The location of the garden must be carefully selected as it can impact food safety. The location must be away from dumpsters, underground tanks or other underground sources of contamination, and any area near a facility that houses livestock. The area should be free of overhead trees and tree limbs where animal droppings can contaminate the garden. Fencing should be adequate to deter animals such as deer, rabbits, groundhogs and pets. Fence openings should be no greater than one (1) inch. Consider installing a barrier using chicken wire, but consult with your school's principal and engineer before installing a fence.

Unwanted visitors can become the source of intentional and unintentional contamination leading to serious illness or injury. The location should be an area where the garden is fenced in to deter unwanted visitors.

All new CPS gardens used for food production must be planted in raised beds. All soils and growing media imported onto the school site shall meet one of these standards:

- Imported soils must be analyzed and approved by the CPS Environmental Service Manager. An analysis of the soil can be done by CPS at the school's expense or the provider of the soils can provide an analysis that is less than 6 months old and includes all parameters for clean soil.
- Commercial soil amendments or compost is acceptable in school gardens. It must be tested to meet IEPA standards or, if bagged, be certified by the Mulch & Soil Council (MSC) (http://mulchandsoilcouncil.org).
- Imported compost that meets IEPA General Use Compost performance standards (35 ILCS Part 830.503) may also be used.

Laboratory analysis of bulk imported growing media, in the form of an Materials Safety Data Sheet (MSDS), must be provided to the CPS Environmental Services Manager prior to importing the materials onto CPS property. Bagged growing media are allowed without an MSDS. Please find the CPS Environmental Services Managers contact information on the following page.

Schools with existing gardens that want to begin food production must first contact the CPS Environmental Services Manager for permission to test soils. Soil testing will be done by CPS Environmental Consultants at the school's expense. Soil testing protocols should then be followed to meet IEPA standards.

SOIL CONTAMINANTS

When evaluating your garden site's soil, these contaminants will be tested for by an IEPA approved laboratory:

1. Semi-Volatile Organic Compounds (e.g., benzo(a)pyrene)
2. Chemicals (e.g., herbicides and pesticides)
3. Heavy Metals (e.g., lead)

NOTE: Any soil testing on Chicago Public Schools' property must first be authorized by the CPS Environmental Services Manager.

Lead is an example of a heavy metal that can be found in the soil and has been found to be toxic to the nervous system[7]. Lead can be absorbed into the plant tissue and also be found in the produce grown in your garden. Contaminated soil particles are more likely to be imbedded in leafy greens or root crops rather than fruiting vegetables such as tomatoes and cucumbers[10]. Properly washing your vegetables before it is served is a key step to reducing health risks.

Heavy metals found in soil are a common problem in urban areas[7]. All soils will have a natural lead level between 5 ppm and 40 ppm; however, Chicago Public Schools require soils to have a lead level of 23 ppm or less[22]. For a sample soil test result from an IEPA approved laboratory, refer to Appendix K.

4 Appendix K – Soil Test Results Examples

In addition to lead, other important soil contaminants to look out for include arsenic and organic contaminants such as benzo(a)pyrene that are considered carcinogenic.

SOIL TESTING

Laboratory testing will determine your soil's nutrient status as well as identify possible carcinogenic or heavy metal contaminants. As a reminder, any soil testing on Chicago Public Schools' property must first be authorized by the CPS Environmental Services Manager.

Once approved for testing, collection of soil samples must be done by environmental professionals with Occupational Health and Safety Administration (OSHA) 40 hour HAZWOPER training. CPS maintains a list of prequalified Managing Environmental Consultants who will collect and transport samples for analysis to an approved laboratory. All soils analysis must be done by an Illinois Environmental Protection Agency approved laboratory.

For more information about soil testing and/or purchase, contact Chicago Public Schools Environmental Services:

Lynn Crivello
CPS Environmental Services Manager
(773) 553-3113 lacrivello@cps.k12.il.us

RAISED BEDS

All edible school gardens must be planted in raised beds to minimize soil contamination risk. Raised beds can be built from one foot to approximately waist high and must be accessible to students with disabilities and must be ADA (Americans with Disabilities Act) compliant.

Use non-toxic, non-leaching materials for raised-bed gardens, containers, stakes, or trellises. Cedar or composite recycled timbers are considered good materials to use8. Hollow tiles, stone, bricks, logs, "plastic lumber" made of recycled plastic and unpainted concrete blocks can be used. DO NOT use pressure-treated wood, used tires, single-use plastics, or old railroad ties. The holes in concrete blocks can be filled with dirt to seed vine crops such as squash or pumpkins[27].

Photo: Academy for Global Citizenship

Photo: Academy for Global Citizenship

SOIL AMENDMENTS

Soil amendments are added to improve your soil's physical properties whether it's aeration, water retention, or nutrient-holding capacity. Soil amendments include the following:

1. Compost
2. Manure (Do NOT use raw manure. Use ONLY commercial composted manure that has been properly treated.)
3. *Fertilizers

*Chicago Public Schools prohibits the use of harmful chemicals on CPS property. CPS promotes natural growing methods in school gardens. This section will discuss alternatives to using chemical fertilizers in your school's garden.

Commercial soil amendments must be certified by the Mulch & Soil Council (MSC) and applied in accordance with applicable federal, state, and local regulations. You must have Material Safety Data Sheets for all commercially obtained soil amendments and keep these MSDS with the garden records.

Compost

Composting creates a beneficial product out of organic waste that would have otherwise ended up in the landfill. Compost involves the decomposition of organic matter such as brush, tree prunings, and acceptable grass clippings and fruit/vegetable scraps.

Microorganisms break down the organic matter to create a nutrient-rich material, called humus. Humus helps improve soil quality and should be incorporated into soil every year.

There are many benefits to using compost that include[13]:

1. Improving soil structure, which supports root development;
2. Providing plant nutrients to the soil, which allows an increased uptake of nutrients by plants;
3. Helping absorb and retain water in the soil.

However, you must ensure your compost is free of potential pathogens. You also need to make sure that it is stored and handled properly. Here are a few items to consider when using compost in your school garden:

1. If your school purchases commercial grade compost:
   a. A good resource for approved compost suppliers is http://www.omri.org (Organic Materials Review Institute or OMRI).
   b. The Food Safety Manager is responsible for choosing a supplier and keeping relevant compost documentation on file.
   c. When choosing a supplier, you should have documents on file that detail composition and the method of treatment including temperature and moisture management. The producer should also be able to verify that the pile was protected from recontamination[1]. Here is a list of IEPA compost standards to consider[2]:
      i. Must be free of any materials which pose a definite hazard to human health due to physical characteristics, such as glass or metal shards;
      ii. Must not contain man-made materials larger than four millimeters in size exceeding 1% of the end-product compost, on a dry weight basis;
      iii. Must have a pH between 6.5 and 8.5;
      iv. Must have reached stability, as demonstrated by one of the methods prescribed by the Illinois Pollution Control Board (IPCB) and Illinois Environmental Protection Agency (IEPA);
      v. Must not exceed, on a dry weight basis, the inorganic concentrations set forth in Section 830. Table A by the IPCB and IEPA;
      vi. Must not contain fecal coliform populations that exceed 1000 MPN per gram of total solids (dry weight basis), or Salmonella species populations that exceed 3 MPN per 4 grams of total solids (dry weight basis).
2. If your school is producing or wants to produce its own compost:
   a. Although composting provides an excellent learning tool for your students, compost produced on-site can ONLY be used in CPS ornamental gardens and NOT in edible gardens. Please note that this applies to schools who are participating in the Eat What You Grow Program. Compost made from food scraps cannot be adequately monitored, controlled or tested to ensure the final product is safe for growing food served to our students and customers.

      Despite only being used in ornamental gardens, composting procedures must still comply with state and local regulations. Refer to the City of Chicago Composting Ordinance, Chapters 7-28 of the Municipal Code. The ordinance allows a maximum of 5 cubic yards of compost in an enclosed container.

Photo: Clayton Miller

Manure

Commercial manure that has been properly treated at the correct temperature range can be used for school gardens[7]. Schools should NOT use farm manure or pet waste. With each purchase of manure, documentation of analysis should be received and filed with your other soil amendment records. Again, OMRI (www.omri.org) is a good resource for organic products.

Fertilizers

Chemicals

The Chicago Public School Integrated Pest Management Policy[21] prohibits the use of any harmful chemicals on CPS property including chemical fertilizers. Read on for recommended methods.

Organic Fertilizers

Blood meal, dried blood, fish emulsion, and kelp are safe to use as natural fertilizers and animal repellents. All can be found at your local nursery. Look for OMRI approved fertilizers and amendments. These products comply with USDA organic standards.

If you are looking for natural alternatives to improving your plant's health, other methods include[20]:

1. Choosing plants suited for your site and soil.
2. Starting with healthy seeds and plants.
3. Growing disease resistant cultivars.

Use the Soil Amendment Log (included in the Appendix) to record the types fertilizers used in your garden.

4 Appendix L – Soil Amendment Log

Photo: Academy for Global Citizenship

WATER QUALITY

Healthy water is an essential element to safe produce. From pre-harvest to post-harvest, ONLY clean, potable water must be used[17].

All CPS school gardens use municipal water. All water supplied by the City of Chicago Department of Water is required by Federal and State law to meet stringent water quality standards. Testing should be requested only where water service has been interrupted or where construction to the system has occurred. The Chicago Department of Water does not have the capacity to test every school with a garden.

Rain Barrel Water

Many school gardens utilize rain barrels to help conserve water by collecting and storing water from rooftops. Rain barrels are a great way to save water for bouts of dry weather. This water is NOT potable. Rain barrel water may only be used to water ornamental plants or trees.

If rain barrels are used, they must be designed and constructed to prevent and control mosquitoes from breeding. Mosquitoes are attracted to standing water and therefore a fine mesh screen should cover all open-ended rain barrels. Rain barrels are not meant to serve as permanent or long-term water storage and should be emptied once every seven days. Consistent emptying will prevent mosquitoes from entering and breeding in the water.

Irrigation Method

Watering by hose or sprinkler should be scheduled in the morning. Following this schedule will not only help conserve water but also speed-up leaf drying time, which will help reduce the survival of pathogens on the crop[1]. Also make sure to use food grade containers when transporting water.

GET INVOLVED

To further help and protect your water sources, consider joining your local watershed group to participate in decisions and increase your awareness of water use in your area.

GROW NATURALLY

The Chicago Public School Integrated Pest Management Policy[21] prohibits the use of any harmful chemicals on CPS property including chemical herbicides and fertilizers. Read on for recommended methods.

Natural growing methods are encouraged in school gardens since it minimizes the health risks of Garden Participants and the impact on the environment. Instead of using conventional fertilizers and pesticides, here is a list of recommended practices:

- Synthetic herbicides, fungicides, or insecticides (with the exception of mosquito repellent) are prohibited for use in the garden.
- There are many insects that can be found in the garden, and the majority of them are beneficial. A small number, however, do damage crops, but these can be successfully managed using organic pest management techniques, such as companion planting or Integrated Pest Management, which is described below. Chemical pesticides should not be used in school gardens
- Instead of using herbicides, weeds can be controlled by mulching, hand weeding and weeding tools.

INTEGRATED PEST MANAGEMENT[16]

Integrated Pest Management, or IPM, is an environmentally sensitive approach to pest management using practices focused on preventing the root causes of infestations.

How Does It Work?

IPM is not a single control method, but rather a combination of pest management controls. Practices include limiting pest infestations by creating physical barriers to pests (fencing, bed covers, etc); reducing the food, water and harborage available to them; and routine inspection and monitoring.

For additional information about pest infestations at your garden, contact the School Garden Coordinator.

ANIMAL & PEST CONTROL

Although the risk of potential pathogens found in domestic animal manure is a major concern, wild animals, including rodents, deer, geese, and even flies have been found to carry harmful human pathogens such as E. coli 0157:H7. Of course, it is nearly impossible to eliminate all animal influences from garden sites and produce handling areas, but there are steps you can take to minimize their presence or activities. A well-managed animal and pest control program will help reduce pest infestation problems

Animal and Pest Control in the Garden[1, 7]

- Garden Leaders need to ensure that produce is harvested regularly and compost or rotting vegetables are properly disposed.
- Keep cats, dogs and other pets out of the garden, as animal waste can be a source of bacteria, parasites and viruses.
- Do NOT feed birds near the garden. Bird feed can attract rodents.
- Restrict nesting and hiding places for rodents by mowing grass and tall vegetation that is around the garden.
- Cover the ends of stakes and posts with plastic or metal cones to keep birds from resting and defecating in or near the garden.
- It is recommended that a fence be installed around the garden site. A fence will reduce the risk of harvesting produce contaminated by animal droppings. Please note that the City of Chicago Municipal Code requires decorative fencing be installed in areas that face the street. Consult with your school's principal and engineer before installing a fence.
- If serious infestations occur, please contact the CPS School Garden Coordinator.

Animal and Pest Control in the Produce Handling Areas [1, 3]

- Traps should be inspected daily. The Food Safety Manager should keep a map of all trap locations with all other food safety records.
- If serious infestations occur, please contact the CPS School Garden Coordinator.

Photo: Chicago Botanic Garden

SECTION 4: Harvest and Postharvest Handling

This section will cover the following topics:

- Garden Harvest
- Post-Harvest Handling

GARDEN HARVEST

The Food Safety Manager must provide training and review to both Garden Leaders and Garden Participants on the following harvest related food safety risks:

1. Health and Hygiene
2. Tools and Equipment Maintenance Management
3. Proper Harvest Handling

The Garden Leader should lead by example and make sure that participants are properly implementing food safety best practices. The Garden Leader must make sure all record keeping forms relevant to the garden harvest are properly completed. Garden Participants can assist with inspection and record keeping as long as they are properly trained. It is best to assign participants to this duty so that it becomes a routine. Once forms are filled, The Garden Leader needs to return all forms to the Food Safety Manager.

Health and Hygiene Review

When it is time to harvest, it is important that all garden participants follow the good hygiene practices that were mentioned in the Health and Hygiene section. The Food Safety Manager needs to make sure that all Garden Leaders and Garden Participants have been trained on good health and hygiene practices. Garden Leaders need to make sure that these practices are implemented whenever participants are helping in the garden, especially when harvesting fresh produce.

Tools and Equipment Maintenance Management

When working with gardening tools and other harvesting equipment, the following must be implemented in your food safety plan and must be monitored by the Garden Leader and Garden Participants:

1. Tools and equipment, such as harvesting containers, should be made of materials that can be easily cleaned and made of a non-porous material (e.g., metal, stainless steel, or plastic)[9]. Harvesting containers should be made of food grade materials that are designed to safely hold food. These are NOT food grade containers:

   a. Garbage bags

   b. Garbage cans

   c. Containers that originally held chemical products

   Tools and harvesting containers should be sanitized thoroughly using a foodservice approved sanitizer. One example is the non-toxic, biodegradable cleaner Simple Green®. They should then be rinsed with potable water.

2. The Garden Leader needs to develop a schedule for cleaning and repairing tools to reduce the potential for contamination.

   a. It is recommended that the tools be cleaned, repaired and/or inspected weekly. This activity should be recorded on the Appendix C - Harvest Activity Log.

   b. If participants bring their own tools for use in the garden, these tools should also be cleaned weekly and before use in the garden.

3. Have a designated storage area for all tools when not in use. When Garden Participants take a break, use the restroom, or leave for the day, tools should be kept in a designated area as to minimize contamination.

4. If using vehicles, such as motorized carts or utility vehicles, to transport harvested produce, these vehicles should be inspected for leaks, necessary repairs, and a maintenance checklist kept on file.

5. There should be designated bins for compost and harvested produce. The bins should not be used interchangeably.

6. Harvesting bins should not be used for any other purpose other than carrying produce.

4 Appendix C– Harvest Activity Log

Proper Harvest Handling

When it comes time to harvesting your garden produce, the Garden Leader needs to gather the following items:

- Sanitized Harvest Containers (e.g., food grade plastic baskets)
- Sanitized Produce Storage Containers with Labels
- Harvest Activity Log
- Scale (also properly sanitized)

A Harvest Activity Log can be found in the Appendix. Use the harvest activity log to record date of harvest, participants assisting with harvest, list of produce harvested, weight of harvest, and recipient of harvest

All participants should be trained how to record harvest activities and proper harvesting procedures.

A note for Garden Leaders, when harvesting, these procedures should be followed [2, 19]:

1. As a reminder, all participants must wash their hands before and after harvesting.
2. If participants use gloves to harvest, they must be clean. However, the best practice is to use single-use disposable gloves when harvesting.
3. Harvest as early as you can in the morning.
4. Ideally, pick only dry fruits and vegetables.
5. Produce should not be eaten while harvesting.
6. Remove as much dirt and debris from the produce as possible in the garden site.
7. DISPOSE OF ANY PRODUCE THAT HAS FECES ON IT OR IS DAMAGED/DISEASED. This produce should be transported to a remote cull pile to avoid attracting pests or creating a susceptible environment for both human and plant pathogens.
8. HANDLE WITH CARE! Handle the produce as little as possible making sure not to bruise or damage the produce. Punctured or bruised produce are more susceptible to harmful pathogens. Once inside, these microorganisms cannot be removed or killed by washing or sanitizing agents.
9. Produce must be kept in a shaded area of the garden and cooled immediately. This will reduce heat gain from the sun.
10. If there are multiple gardens in which produce is being harvested, the Garden Leader needs to ensure produce from different gardens are not mixed together. Each garden produce delivery needs to be clearly labeled providing the name of the garden, date of harvest, produce name(s) and weight.

A Crop Profile of Common Garden Produce is included in the Resource section. It includes recommended harvesting methods.

4 Appendix C – Harvest Activity Log

4 Crop Profiles of Common Garden Produce

Photo: Atina Diffley

POST-HARVEST HANDLING

Once produce is harvested, it is important that the Garden Leader monitor the temperature of harvested produce. Produce should be promptly cleaned and cooled after harvesting. It includes recommended harvesting methods as well as storage and transporting information. Record time and produce temperature on Appendix C - Harvest Activity Log.

Steps to Remove Debris from Harvested Produce

The Garden Leader needs to ensure these procedures are followed when removing debris from harvested produce:

1. Sanitize all processing areas (e.g., sorting area, food contact surfaces, and scales) and produce storage boxes (e.g., coolers, wax boxes, or storage bins) using a foodservice approved sanitizer and preferably one that is non-toxic and environmentally safe. Cleaning these areas and items should be done on a daily basis or as necessary and should only be sanitized in the school cafeteria, NOT in the garden.
2. Containers used for harvesting should be labeled "UNWASHED". In addition, please include PRODUCE NAME, HARVEST DATE, ROW/BED/or PLOT on the container label. This will help identify where the produce came from.
3. Do not use compost containers for storing produce, even temporarily.

4. Please note, at harvest and/or in the garden, produce must NOT be washed, hosed or sprayed. Produce washing should ONLY take place in the school kitchen. The foodservice staff will wash produce following the proper foodservice handling procedures.
5. If produce contains excessive dirt such as root vegetables or leafy greens, simply wipe off dirt with clean paper towels or shake off debris. Do NOT use wet rags or paper towels to wipe off produce.

Steps to Cooling Produce[19]

1. The produce should be refrigerated immediately and should be cooled to a temperature that is appropriate to the crop.
2. If it is not possible to move the harvested produce to a refrigerated area within one hour of harvest; instead, place the produce in coolers with ice. The ice should come from a potable water source.
3. All cooling equipment should be sanitized before storing produce. Record cleaning on the Appendix B – Harvest Activity Log to document that these areas have been properly cleaned.
4. Upon delivery to a school, produce must be placed in refrigeration.
5. If produce is temporarily left in the cooler and placed in refrigerated storage, the ice needs to be removed from the cooler.
6. ALL produce should be stored in refrigerators and not left out overnight. Discard produce that has been left out.

TRANSPORTING PRODUCE[17]

Most school gardens will only have enough garden produce to serve their own school. In this case, there is no need to consider transporting produce, and it is advised that school garden produce remain at that school. If transportation from a garden or farm site to another facility is required, contact the School Garden Coordinator for necessary cooling information.

Photo: Chicago Botanic Garden at Portland Public Schools

SECTION 5: Foodservice Handling

This section will cover the following topics:

- Training Foodservice Staff
- Receiving Garden Produce
- Washing Produce
- Proper Storage
- Preparing and Serving Produce
- Trace Back and Recall Procedures
- Corrective Action Procedures

TRAINING FOODSERVICE STAFF

All kitchen staff must be properly trained on how to handle fresh garden produce and follow the same requirements enforced by the foodservice provider or stricter health department guidelines. The Food Safety Manager should work with the Kitchen Manager to plan what to grow for the season. The assigned Food Safety Manager and Kitchen Manager should ensure that all kitchen staff are trained on the following:

- Receiving Garden Produce
- Washing Produce
- Produce Storage
- Produce Preparation

Photo: Chicago Botanic Garden at Portland Public Schools

RECEIVING GARDEN PRODUCE[2]

- The Kitchen Manager and Foodservice Staff need to be properly trained on how to receive garden fruits and vegetables and should have a Service Sanitation Manager Certification issued by the Illinois Department of Public Health. School garden produce should be received and inspected using the same system that is used for all other incoming food products.
- Before the harvest can be received by the Foodservice Staff, the Garden Leader or Food Safety Manager must approve the quality of the harvested produce and communicate this to the Kitchen Manager.
    - A completed Harvest Activity Log must accompany every garden produce delivery.
    - The Kitchen Manager or trained Foodservice Staff must check that the Garden Leader or Food Safety Manager has initialed the Harvest Activity Log.
    - The Kitchen Manager or trained Foodservice Staff will receive the produce by checking the produce against the produce listed on the Harvest Activity Log and inspect the cleanliness of the product.
    - The Kitchen Manager will then initial the Harvest Activity Log.
    - The Harvest Activity Log should then be returned to the Food Safety Manager where it will be filed accordingly with all other food safety records.
- Produce must be used within 2 days of being received.

WASHING PRODUCE

Follow these steps when washing garden produce:

- When washing produce, all Foodservice Staff must properly wash their hands using the techniques discussed in the Health and Hygiene section.
- Garden produce must be washed separately from other school produce and washed the SAME day that it is served. Unwashed garden produce must NOT be mixed with other school produce.
- It is acceptable to give produce a triple wash if it has excessive sand, dirt or soil. Be sure sinks are washed and sanitized in between.
- Use a sanitized sink to wash produce. It is recommended that a kitchen have a designated food preparation sink. If the kitchen does not have a designated food preparation sink (and only a sink that is used for pot and pan washing is available), make sure there are no cleaning chemicals attached directly to the water faucet at this sink. You must be able to dispense clean, clear tap water. If this is not possible, you may use large food containers that have been properly sanitized.
- Keep a cleaning log near the sink to ensure it is properly cleaned before washing produce.
- Fill the sanitized sink with tap water. For certain types of produce (e.g., apples, celery, and tomatoes) wash water temperature should be warmer or no more than 10°F cooler than that of the produce.
- Produce with thick skins, such as potatoes, can be scrubbed with a vegetable brush to remove all visible dirt7.
- Remove the produce from the sink, rinse again and drain excess water in a colander.
- You can air-dry or use a clean paper towel to remove excess water.

4 Appendix D – Harvest Activity Log

4 Crop Profiles of Common Garden Produce

Photo: Atina Diffley

PROPER STORAGE

Storage Bins

- Produce must be stored separately from other school produce.
- The Food Safety Manager and Garden Leader(s) should develop an organized labeling system with the Kitchen Manager to identify garden produce.
    - Label storage bins (e.g., "School/Community Garden Vegetables").
    - Include the date of harvest and produce harvested.
- In order to avoid damage to produce, Foodservice Staff must keep fruit and vegetable off of the floor. Keep produce stored in storage bins in the refrigerator, which should be kept sufficiently clean.
    - Keep a cleaning log to ensure regular produce storage maintenance and cleanliness.
    - The Kitchen Manager needs to check this log daily.
    - When all entries have been filled, the completed log should then be returned to the Food Safety Manager where it will be filed accordingly with all other food safety records.

Temperature Control

- Cold Storage is a Critical Control Point meaning that foods can become unsafe if they are not kept at proper cold storage temperatures. You must have a thermometer to check that your refrigerator is at the proper temperature. The Kitchen Manager is responsible for making sure refrigerators are kept at the correct temperature range.
    - When placing a portable thermometer in a refrigerator, put it in the warmest part of the unit, which is usually near the door.
    - Proper Refrigerator Temperature: 40°F or less[18].
    - The vegetables should be stored in the cooler/refrigerator for one day to reduce their temperature to below 40°F[2].
- A Cold Storage Temperature Log will help record this information.
    - The Kitchen Manager or an assigned Foodservice Staff needs to check and update this log twice a day. It's best to make it a routine by checking the thermometer first thing in the morning and at the end of the day. Assigning the same staff to this task may also help make sure that it is done.
    - Important Note – USDA Forms – In some states a USDA form may be required to be used for storage area temperature checks. In this case you must use the USDA form instead of the Cold Storage Temperature Log. Your foodservice director should provide the Kitchen Manager with the required forms.

- The Kitchen Manager needs to post Cold Storage Signage to remind staff about critical food safety rules for cold storage.
    - Important: Never leave refrigerator doors standing open for any reason!
    - The Kitchen Manager needs to be immediately notified if[18]:
        - Unsafe temperatures are noted.
        - A refrigerator is not working properly.
        - Water or ice is building up in or around the refrigerator.

Photo: Atina Diffley

PREPARING AND SERVING PRODUCE[18]

All Foodservice Staff must have a Service Sanitation Manager Certification issued by the Illinois Department of Public Health. If teachers, parents or students are helping with the preparation in a school cafeteria, they should be supervised by a trained food safety staff person and follow the food safety instructions of the certified staff person. Garden produce must be served separately from other school produce. Garden produce will often be served raw; so, implementing best practices in food safety is very important when preparing and serving fresh fruits and vegetables, especially raw produce. All Foodservice Staff must be trained on how to properly prepare and serve produce.

Follow these steps to help minimize food safety risks:

Practice Good Hygiene and Sanitize Work Area

- Wash your hands! All Foodservice Staff MUST wash their hands before handling raw fruits and vegetables using the techniques discussed in the Health and Hygiene section. Hands must be washed before and after handling produce.
    - Single-use gloves MUST be worn when handling ready-to-eat produce and should be replaced using the same rules used for hand washing.
- Foodservice Staff must clean all food-contact surfaces before washing and preparing produce.
    - Foodservice Staff should complete cleaning log whenever food-contact surfaces (sinks, utensils, cutting boards, countertops, etc.) are cleaned.
    - Cleanwork surfaces and utensils before and after handling produce.
    - Use a foodservice approved sanitizer for cleaning work surfaces. Let utensils and surfaces air dry.

Washing and Preparing Produce[19]

- The produce can be used in the salad bar or at lunch service the day after the harvest if the temperature of the produce is below 40°F[2].
- Bruised or damaged parts of fruits and vegetables should be cut away before eating or preparing. Throw moldy produce away[7].
- The produce will not adversely affect the Kitchen Manager's menu plan/ordering if the amount is small and the produce can easily be incorporated into the salad bar or any of the following recipes that are on the menu plan[2].
- Again, produce must be washed in the school kitchen following the proper foodservice handling procedures. Wash produce thoroughly to remove dirt and germs. Produce washing instructions should be posted in the kitchen.
    - Always wash produce before:
        - Cutting or chopping
        - Adding as a recipe ingredient
        - Cooking
        - Serving
        - Displaying whole fruit, such as apples or pears, for service
    - Use a sanitized sink to wash produce. It is recommended that your kitchen have a designated food preparation sink. If a food preparation sink is not available (and only a sink that is also used for pot and pan washing is available), make sure there are no cleaning chemicals attached directly to the water faucet at this sink. You must be able to dispense clean, clear tap water. If this is not possible, you may use large food containers that have been properly sanitized.
        - If you must use the same sink that is used to wash pots and pans, do not wash produce at the same time.
        - Select a specific time to wash all produce, such as the morning.
    - Never use soap, detergent, or bleach solution to wash fruits and vegetables. These products are not meant for washing produce and may not be safe to ingest. They can also adversely affect the flavor.
    - Wash all fruits and vegetables even if you don't eat the skin or rind.
    - Prepare produce on a clean work surface making sure all contact surfaces (e.g., cutting boards, knives, countertop, etc.) are properly sanitized using approved foodservice sanitizers.

Follow these easy steps to 'double-wash' all raw produce for safety:[19]

- Again, clean and sanitize your two sink compartments*.

  * Or other containers your supervisor tells you to use.
- Add cold water to both sinks until they are about half full.
- Remove outside leaves and trim product as needed.

Photo: Atina Diffley

- Put produce in the first wash sink. Make sure it is completely covered with water.
- Give the product a good shake under the water to loosen dirt.
- Use a vegetable brush on the surface of items like cantaloupe and potatoes.
- Remove produce from the first sink and place it in the second wash sink, again making sure it is completely covered with the cold water and not too full.
- Let the produce soak in this rinse water for at least 1 minute.
- Remove produce from the second sink, and drain, shake, or spin it to remove water.
- Produce has been 'double-washed' and is now ready for use.

- Properly store washed fruits and vegetables.
  - NEVER return washed fruits or vegetables to their original boxes.
  - ALWAYS store washed fruits away from unwashed raw produce to prevent cross-contamination.
  - If you have leftover produce that has been cut, sliced, or cooked, store it in a clean, air-tight container in the refrigerator at 40°F or less. To be safe, do not use fresh, cut-up fruits and vegetables if they have been held longer than 2 hours at room temperature or longer than one hour at temperatures above 90°F, unless you intend to cook them.

TRACEBACK AND RECALL PROCEDURES

Traceback Procedures

In the event that it is proven that your garden produce is the source of a foodborne illness outbreak, you need to have a system already in place to trace the product in order to effectively identify the source of the contamination[3]. Again, here is an example where record keeping is essential. You can create this traceability system simply by identifying the product using a basic Harvest Activity Log. Please see Appendix B for a Harvest Activity Log example. It is recommended to have a system in place when harvesting. During each harvest, the garden leader must record the following information[2]:

- Produce harvested
- Weight of produce
- Names of participants who harvested and packed the produce
- The plot it came from
- The date it was harvested and packed
- The date of sale or distribution (if applicable)

4 Appendix C – Harvest Activity Log

Best Practice

- The Food Safety Manager should annually conduct a trace back and trace forward exercise that will test how easily produce can be traced using the harvesting documentation on file.
- It is helpful to ask someone not familiar with your system to undertake the trace back check as it will allow your system to be reviewed by a new set of eyes to assess availability, legibility and interpretability of your trace back system

Recall Procedures

Again, most schools do not have the capacity to transport garden produce. However, if your school garden is distributing its produce to third parties, it is especially important to have a recall procedure in place. In the event of a recall, it is important to keep accurate and complete records during this process. Please refer to the Appendix for the following recall forms:

4 Appendix F - Recall Communication and Retrieval Form for recording communication with the parties concerned and retrieval confirmation.

4 Appendix G- Follow-Up Plan Form to determine preventive plans.

CORRECTIVE ACTION PROCEDURES

Corrective action is required whenever an observation or audit indicates a non-conformance with CPS food safety policies. ALL Garden Participants and Foodservice Staff must be trained on what they must do if there is an observed non-conformance. Non-conformances can either be MINOR or MAJOR. If it is minor, then immediate corrective action should be taken.

Minor Non-Conformance

Here is a list of possible MINOR non-conformance issues in the garden or in the foodservice kitchen:

- Equipment used to harvest produce is not properly sanitized.
- Produce accidentally dropped on the floor.

For a MINOR non-conformance, what do you do?

1. Take immediate corrective action; for example, if produce drops on the floor, dispose of the potentially contaminated produce.
2. If a MINOR non-conformance is observed by a Garden Participant or Foodservice Worker, they must communicate the issue and corrective action to the Garden Leader or Kitchen Manager.
3. Documentation is not necessary.

Major Non-Conformance

Here is a list of possible MAJOR non-conformance issues in the garden or in the foodservice kitchen:

- Animal fecal matter is present.
- Garden produce has been stored at an unsafe temperature.

For a MAJOR non-conformance, what do you do?

1. When these non-conformances are observed, they must be reported immediately to the Food Safety Manager or the Kitchen Manager.
2. The Food Safety Manager and/or Kitchen Manager (wherever the issues are observed) must assess the non-conformance and:
    a. Determine the required corrective action.
    b. Determine the cause of the issue.
    c. Determine the required preventive action.
    d. Determine new food safety procedures if found necessary.
    e. Train staff and garden participants on new procedures.
    f. Document the non-conformance, corrective actions, and preventive actions in the food safety records. The Food Safety Policy and Plan Review Form can help you to document corrective and preventive actions throughout the year.

The Food Safety Field Guide for Food Safety Managers

A Project by FamilyFarmed.org
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The Chicago Botanic Garden,
and Chicago Public Schools

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CHICAGO PUBLIC SCHOOLS CPS

CHICAGO BOTANIC GARDEN

Photo: Chicago botanic Garden at Henson School

The Food Safety Field Guide is adapted from the Eat What You Grow! School Garden Food Safety Manual and the USDA Food Safety Tips for School Gardens and is a convenient food safety checklist. For detailed information, please refer to the school garden food safety manual.

Below is a list of food safety manager responsibilities:

- Delegates and documents those responsible for each food safety risk area covered.
- Ensures Garden Leaders are thoroughly trained in food safety best practices.
- Oversees Garden Leaders to ensure food safety best practices are implemented.
- Communicates with the Kitchen Managers ensuring the food safety plan is properly implemented.
- Manages all garden related food safety documents and tracks any necessary updates such as corrective actions.
- Ensures garden staff and garden participants are familiar with food safety protocols.

Cover photo: Academy for Global Citizenship

Getting Started

YOUR FOOD SAFETY TEAM

- Assign and document those responsible for each food safety risk area covered. Use Appendix A to document those accountable for food safety.
- Ensure Garden Leaders are thoroughly trained in food safety best practices and are implementing the food safety plan.
- Make sure Kitchen Managers and all foodservice staff have been properly trained in food safety best practices and are implementing the food safety plan.
- Manage all garden related food safety documents and track any necessary updates such as corrective actions.

FOOD SAFETY TRAINING

- Attend and successfully complete a food safety workshop or training. Food Safety Managers must attend a training conducted by the University of Illinois Agriculture Extension Service.
- Develop food safety trainings that include all the relevant risk areas.
  - Trainings include information from Health and Hygiene; The Garden; Harvesting, Post-Harvest Handling; and Foodservice Handling.
  - Trainings will be used to teach Garden Participants about food safety risks in their areas.

RECORD KEEPING

- Create a binder or file folder that houses all food safety information including all documents and your food safety plan.
- Make sure this binder is updated regularly. For CPS participants, keep documents for a minimum of four years. For questions concerning document disposal, please contact the CPS Enterprise Records Manager, 773-553-1679.

Photo: Chicago Botanic Garden

Photo: Chicago Botanic Garden

Health and Hygiene

HAND WASHING AND SIGNAGE

- Make sure proper health and hygiene signage is available to Garden Leader(s) to post on-site.
- File all health and hygiene documentation in the food safety binder or file folder.

HAND WASHING STATIONS AND TOILET FACILITIES

- Must ensure those working in the garden have access to a hand washing station and toilet facilities. If there is no access to the school's bathroom facilities, there must be an alternative hand washing station and portable toilet available.

GOOD HEALTH AND HYGIENE TRAINING

- Must ensure ALL Garden Participants are trained on Good Health and Hygiene Practices including:
- Proper hand washing techniques
- Procedures in the event of participant illness or injury
- Handling of blood and bodily fluid in the garden site
- First aid procedures and identifying first aid kit location(s)

The Garden

SITING AND SOIL

- Locate gardens away from potential contamination sources (garbage, utilities, animals, water runoff, flooding, etc.).
- All new food production gardens must use raised beds. Expansion of existing food gardens is limited to raised beds.
- Soil testing is required for all imported growing media including soils and compost. Soil sampling must be done by environmental professionals approved by CPS. Analysis of soils must be done by laboratories approved by the Illinois Environmental Protection Agency. For more information about soil testing and/or purchase, contact Chicago Public Schools Environmental Services: Lynn Crivello,CPS Environmental Services Manager: (773) 553-3113, lacrivello@cps.k12.il.us
- Record accredited laboratory soil test results in food safety files.

RAISED BEDS AND OTHER GARDEN MATERIALS

- Use non-toxic, non-leaching materials for raised-bed gardens, containers, stakes, or trellises. Do not use pressure-treated wood, used tires, single-use plastics or old railroad ties.

SOIL AMENDMENTS

- If your garden purchases soil amendments, choose a supplier that can provide documentation that details compost analysis, composition and method of treatment.
- Although composting provides an excellent learning tool for your students, compost produced on-site can ONLY be used in CPS ornamental gardens and NOT in edible gardens.
- DO NOT USE RAW MANURE as it may increase the risk of contamination from pathogens.
- DO NOT USE COMPOSTED MANURE due to increased risk of contamination from pathogens that are not completely destroyed.

ANIMALS & PEST CONTROL

- Create reasonable barriers to keep wild animals away from the garden. Examples include fencing or cages over produce items such as strawberries, leafy greens, etc. Check with your school's facility operations department before installing fences.

RISK ASSESSMENT

- A qualified resource must conduct an independent Risk Assessment based on Good Agricultural Practices to validate that food safety policies and procedures are in place. Contact the CPS School Garden Coordinator at the CPS Office of Student Health and Wellness for a list of third party risk assessment resources.

Harvesting and Post-Harvest Handling

GARDEN HARVEST

- Must ensure ALL Garden Participants and Garden Leader(s) are trained on the following harvest related food safety risks:
- Participant Health and Hygiene
- Tools and Equipment Maintenance Management
- Proper Harvest and Post-Harvest Handling
- File all harvest and post-harvest documentation in the food safety binder or file folder.

Foodservice Handling

TRAINING FOODSERVICE STAFF

- Plan what to grow with your Foodservice Manager.
- Inform foodservice staff to receive garden produce using the same process as any other incoming food product.
- File all foodservice handling documentation related to garden produce with all other food safety records.

TRACE BACK PROCEDURES

- Develop a trace back procedure.
- Use Appendix B for trace back records (Harvest Activity Log).

RECALL PROCEDURES

- Develop a recall procedure.
- Use Appendices D and E for recall records.

CORRECTIVE ACTION PROCEDURES

- For major non-conformances, document the non-conformance, corrective actions, and preventive actions in the food safety records.

The Food Safety Field Guide for Garden Leaders

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CHICAGO PUBLIC SCHOOLS CPS

CHICAGO BOTANIC GARDEN

Photo: Academy for Global Citizenship

The Food Safety Field Guide is adapted from the Eat What You Grow! School Garden Food Safety Manual and the USDA Food Safety Tips for School Gardens and is a convenient food safety checklist. For detailed information, please refer to your school garden food safety manual.

This Field Guide is intended for Garden Leaders. The Garden Leader is responsible for the following:

- Ensuring all garden participants are following food safety best practices.
- Completing any necessary food safety documentation (e.g., Harvest Activity Log, Illness/Injury Report Form, etc.).
- Communicating with the Food Safety Manager and the Kitchen Manager.

Getting Started

FOOD SAFETY TRAINING

- Garden leader(s) must attend and successfully complete a food safety workshop or training.

Cover photo: Academy for Global Citizenship

Health and Hygiene

HAND WASHING AND SIGNAGE

- Post hygiene signs where they can be clearly read.
- Assign a garden participant(s) to help maintain and replenish supplies at hand washing station(s).

PARTICIPANT HEALTH

- Do not allow anyone to work in the garden while sick, or until 48 hours after symptoms have ended, such as vomiting or diarrhea, have subsided. For illness due to Norovirus, the rule is 72 hours after symptoms have ended.
- Report any illness/injury incidents using the CPS Verify Incident Reporting System when necessary.
- Make sure first aid kit inventory is checked and restocked regularly.

GOOD HEALTH AND HYGIENE TRAINING

- Must make sure ALL Garden Participants are implementing Good Health and Hygiene Practices including:
- Proper hand washing techniques
- Procedures in the event of participant illness or injury
- Handling of blood and bodily fluid in the garden site
- First aid procedures and identifying first aid kit location(s)

The Garden

ANIMALS & PEST CONTROL

- Oversee garden harvest and make sure that produce is harvested regularly and that compost or rotting vegetables are disposed of properly.

Photo: Academy for Global Citizenship

Harvesting and Post-Harvest Handling

GARDEN HARVEST

- Make sure all harvesting containers are made of food grade materials that can be easily cleaned and are properly sanitized. Use Appendix C to keep track of harvest container cleaning activities.
- On harvest days, collect the following items:
- Properly sanitized harvest and storage containers
- Harvest Activity Log (Appendix C)
- Scale (must also be sanitized)
- On harvest days, follow these procedures:
- As a reminder, all participants must wash their hands before harvesting.
- Harvest as early as you can in the morning.
- Ideally, pick only dry fruits and vegetables.
- Remove as much dirt and debris from the produce as possible in the garden site.
- Never harvest any produce that has feces on it.
- HANDLE WITH CARE! Handle the produce as little as possible making sure not to bruise or damage the produce. Punctured or bruised produce are more susceptible to harmful pathogens.
- Produce must be kept in a shaded area of the garden and cooled immediately. This will reduce heat gain from the sun.

POST-HARVEST HANDLING

- Monitor the temperature of harvested produce.
- Ensure these procedures are followed:
- Sanitize all processing areas (e.g., sorting area, food contact surfaces, and scales) and produce storage boxes (e.g., coolers, wax boxes, or storage bins) using a foodservice approved sanitizer and preferably one that is non-toxic and environmentally safe. Cleaning these areas and items should be done on a daily basis or as necessary and should only be sanitized in the school cafeteria, NOT in the garden.
- Containers used for harvesting should be labeled "UNWASHED." In addition, include PRODUCE NAME, HARVEST DATE, ROW/BED/or PLOT on the container label. This will help identify where the produce came from.
- Do not use compost containers for storing produce, even temporarily.
- Please note, at harvest and/or in the garden, produce must NOT be rinsed or washed. Produce washing should ONLY take place in the school kitchen. The foodservice staff will wash produce following the proper foodservice handling procedures.
- You should communicate with your Foodservice Manager to make sure they approve receiving produce that may have excessive dirt such as root vegetables. If produce contains excessive dirt such as root vegetables or leafy greens, simply wipe off dirt with clean paper towels or shake off debris. Do NOT use wet rags or paper towels to wipe off produce.

STEPS TO COOLING PRODUCE

- If it is not possible to move the harvested produce to a refrigerated area within one hour of harvest, place the produce in coolers with ice
- All cooling equipment should be sanitized before storing produce.
- Before placing the cooler in refrigerated storage, the ice should be removed.
- Bacteria can grow on produce that is stored at above 40 degrees; so, all produce should be stored in refrigerators and not left out overnight. Otherwise, this produce needs to be discarded.

TRANSPORTING PRODUCE (if applicable)

- Whenever produce is shipped, record its temperature in a log.

Foodservice Handling

GARDEN PRODUCE POST-HARVEST HANDLING

- Develop an organized labeling system with the Kitchen Manager to identify garden produce.
- Make sure excess dirt is removed.

The Food Safety Field Guide for Food Service Managers

A Project by FamilyFarmed.org in collaboration with Academy for Global Citizenship, The Chicago Botanic Garden, and Chicago Public Schools

FamilyFarmed.org

Academy for Global Citizenship

Chicago Public Schools CPS

Chicago Botanic Garden

Photo: Chicago Botanic GardenPortland Public Schools

The Food Safety Field Guide is adapted from the Eat What You Grow! School Garden Food Safety Manual and the USDA Food Safety Tips for School Gardens and is a convenient food safety checklist. For detailed information, please refer to your school garden food safety manual.

Below is a list of kitchen manager responsibilities:

- Ensure all foodservice staff are implementing food safety best practices.
- Communicate with the Food Safety Manager and Garden Leader(s).
- Complete all necessary food safety documentation.
- Manage all foodservice related food safety documents and track any necessary updates.

General Requirements

FOOD SAFETY TRAINING

- Develop any necessary food safety trainings for Foodservice Staff that include all the relevant risk areas.

Health and Hygiene

GOOD HEALTH AND HYGIENE TRAINING

- Make sure ALL Foodservice Staff are implementing Good Health and Hygiene Practices including:
- Proper hand washing techniques
- First aid procedures and identifying first aid kit location(s)

Cover photo: Portland Public Schools

Photo: Academy for Global Citizenship

Foodservice Handling

TRAINING FOODSERVICE STAFF

- Train Foodservice Staff on how to properly receive garden produce:
- A completed Harvest Activity Log must accompany every garden produce delivery.
    - The Kitchen Manager or trained Foodservice Staff must check that the Garden Leader or Food Safety Manager has initialed the Harvest Activity Log.
    - The Kitchen Manager or trained Foodservice Staff will receive the produce by checking the produce against the produce listed on the Harvest Activity Log and inspect the cleanliness of the product.
    - The Kitchen Manager will then initial the Harvest Activity Log.
    - The Harvest Activity Log should then be returned to the Food Safety Manager where it will be filed accordingly with all other food safety records.

WASHING GARDEN PRODUCE

- Train Foodservice Staff on how to properly wash produce.
- If possible, designate one sink as the food preparation sink. Use this sink to wash produce.

PROPER PRODUCE STORAGE

- Develop an organized labeling system to identify garden produce.
- Train Foodservice Staff to regularly clean produce storage.
- Keep a Cold Storage Temperature Log to make sure refrigerator and freezer are at food safe temperatures. Train and assign Foodservice Staff to record this information first thing in the morning and at the end of the day.
- Post Cold Storage signage to remind Foodservice Staff the critical food safety rules for cold storage.

CORRECTIVE ACTION PROCEDURES

- For major non-conformances (e.g., produce that was improperly stored), document the non-conformance, corrective actions, and preventive actions in the food safety records.

APPENDICES:
Record Keeping Templates and Signage

A Project by FamilyFarmed.org
in collaboration with
Academy for Global Citizenship,
The Chicago Botanic Garden,
and Chicago Public Schools

FamilyFarmed.org

Academy FOR Global Citizenship

CHICAGO PUBLIC SCHOOLS CPS

CHICAGO BOTANIC GARDEN

APPENDIX A - School Garden Food Safety Checklist

Food Safety Manager is _____ phone: _____

Food Service Manager is _____ phone: _____

Garden Leader is _____ phone: _____

Soil is from _____ checked on _____

Water is from _____ checked on _____

Location of handwashing station and toilet _____

Location of first aid kit _____

General Supplies & Equipment:

- First aid kit
- Shovel
- Watering can

Harvest Supplies & Equipment (only required during harvest):

All materials touching produce need to be properly sanitized (include dates completed):

- Harvest labels
- Harvest bin
- Scale
- Scissors/harvesting knife
- Thermometer

Reference Materials

Ensure that the following logs/appendices are being utilized/reviewed:

Appendix C - Harvest Activity Log: I yes I no

Appendix H - When to Wash Your Hands: I yes I no

Appendix I - Garden Rules: I yes I no

Appendix K - Soil Amendment Log: I yes I no

APPENDIX B - Food Safety Team

Date ____/____/_____

Use this form to document the names of persons responsible for food safety at your school garden. There should be at least one Food Safety Manager who oversees the entire food safety program at your garden site. There should be assigned Garden Leaders on-site who are responsible for specific duties such as Harvest Supervisors. Include their names, titles and responsibilities. If applicable, also include the name of the Kitchen Manager. This form should be filed with other food safety documents and updated as needed.

Garden Name: _____

Garden Address: _____

Street Address City State Zip

Food Safety Manager: _____

Name Phone E-Mail

Garden Leader: _____

Name Title Phone or E-mail

Responsibilities (For example: Harvest Supervisor): _____

_____

Garden Leader: _____

Name Title Phone or E-mail

Responsibilities (For example: Harvest Supervisor): _____

_____

Kitchen Manager: _____

Name Phone E-Mail

APPENDIX C - Harvest Activity Log

Use this document to record harvest activities, including fruits and vegetables harvested. The back side of this form can be used to list garden participant names, document hand washing, and track harvest equipment cleaning. This form must be initialed by the Food Safety Manager, Harvest Supervisor and Kitchen Manager.

Garden Name: _____ Date_____

Produce Item	Plot #	Count (e.g., lbs, bunches, pints)	Temperature	Harvest Recipient/Buyer
Total Weight:				

APPENDIX C - Harvest Activity Log CONTINUED

Date	Garden Participant Name	Participant Properly Washed Hands	Participant Properly Cleaned Garden/Harvest Tools
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO
		YES / NO	YES / NO

Food Safety Manager: _____ _____ Date: _____

Print Signature

APPENDIX D - Garden Food Safety Training Log

Training Topic(s): _____

Date/Training Time: _____

Trainer: _____

Training Material (Please attach any written materials to this log with a staple.)

FULL NAME of those present for training (please print)

1. _____

2._____

3 _____

4._____

5._____

6_____

7._____

8_____

9._____

10._____

11._____

12._____

13._____

14._____

APPENDIX E – Food Safety Plan Review

The table below can be used to review your food safety program. It can be used to track non-conformances and corrections made for each risk area. It is recommended the Food Safety Manager review the policy and program annually.

	Reviewed (4)	Date Completed	COMMENTS (Non-Conformances, Corrections, etc.)
General Requirements			
Health and Hygiene			
The Garden			
Harvesting and Post-Harvesting			

Food Safety Manager: _____ _____ Date: _____

Print Signature

APPENDIX F – Recall Communication and Retrieval Form

Person Contacted:	Quantity Delivered and Requiring Recovery:	Quantity Recovered or Destroyed:	Quantity that was NOT Recovered:	Action Taken and Description (e.g., picked up, returned, destroyed, etc.):

Food Safety Manager: _____ _____ Date: _____

Print Signature

APPENDIX G – Follow-Up Plan Form

1. Why was there a recall? (e.g., What was the source of the problem?)

_____

_____

_____

_____

2. What corrective action(s) was/were taken? (List and describe)

_____

_____

_____

_____

3. What ongoing procedures did you put in place to prevent the recurrence of the problem?

_____

_____

_____

_____

4. Identify the person(s) responsible for ensuring the above actions and procedures are monitored and implemented.

_____

_____

_____

_____

Food Safety Manager: _____ _____
Print Signature

Date: _____

APPENDIX H
WHEN to Wash Your Hands

- BEFORE working in the garden.
- BEFORE putting on gloves, and then again when changing them.
- BEFORE handling cleaning chemicals.
- BEFORE cleaning and sanitizing tools.
- AFTER working in the garden.
- AFTER handling cleaning chemicals.
- AFTER eating, drinking, or smoking.
- AFTER taking a break.
- AFTER using the restroom.
- AFTER sneezing, coughing, blowing your nose, or using a tissue or handkerchief.
- AFTER touching your hair, face, body, or clothing.
- AFTER handling garbage.
- AFTER touching an open sore, cut, boil, or pimple.

Illustration by Marcelina Suchocka, William H. Taft School – Academic Center

APPENDIX I
GARDEN RULES!

Food Safety is IMPORTANT!
Read this before entering GARDEN:

- ALL Garden Participants must properly wash their hands before and after working in the garden.
- Garden participants MUST notify the garden leader (or other person in charge) if they have any of the following symptoms or conditions. In these instances, participants will NOT handle fresh produce:
  - They have been diagnosed or were recently ill with a foodborne illness
  - They have any of the following symptoms:
    - Diarrhea
    - Fever
    - Vomiting
    - Jaundice (a yellowing of your skin and eyes)
    - Sore throat with fever
    - Persistent sneezing, coughing, or a runny nose
  - They have a boil, or an infected sore or cut that is open or draining on your hands, wrists, or the exposed areas of your arms
  - They are suspected of causing or being exposed to a foodborne illness outbreak
  - They live with a person diagnosed with a foodborne illness, or a person who attends or works where there is a foodborne illness outbreak
- PLEASE, NO pets in the garden. This will help reduce animal droppings on produce.
- If blood or bodily fluid ever comes in contact with the soil or produce, it must be immediately reported by whoever finds the contamination.

APPENDIX J – First Aid Kit Inventory

Use this form to manage first aid kits. A first aid kit must be located at the garden site. Refer to www.redcross.org for recommended First Aid Kit items.

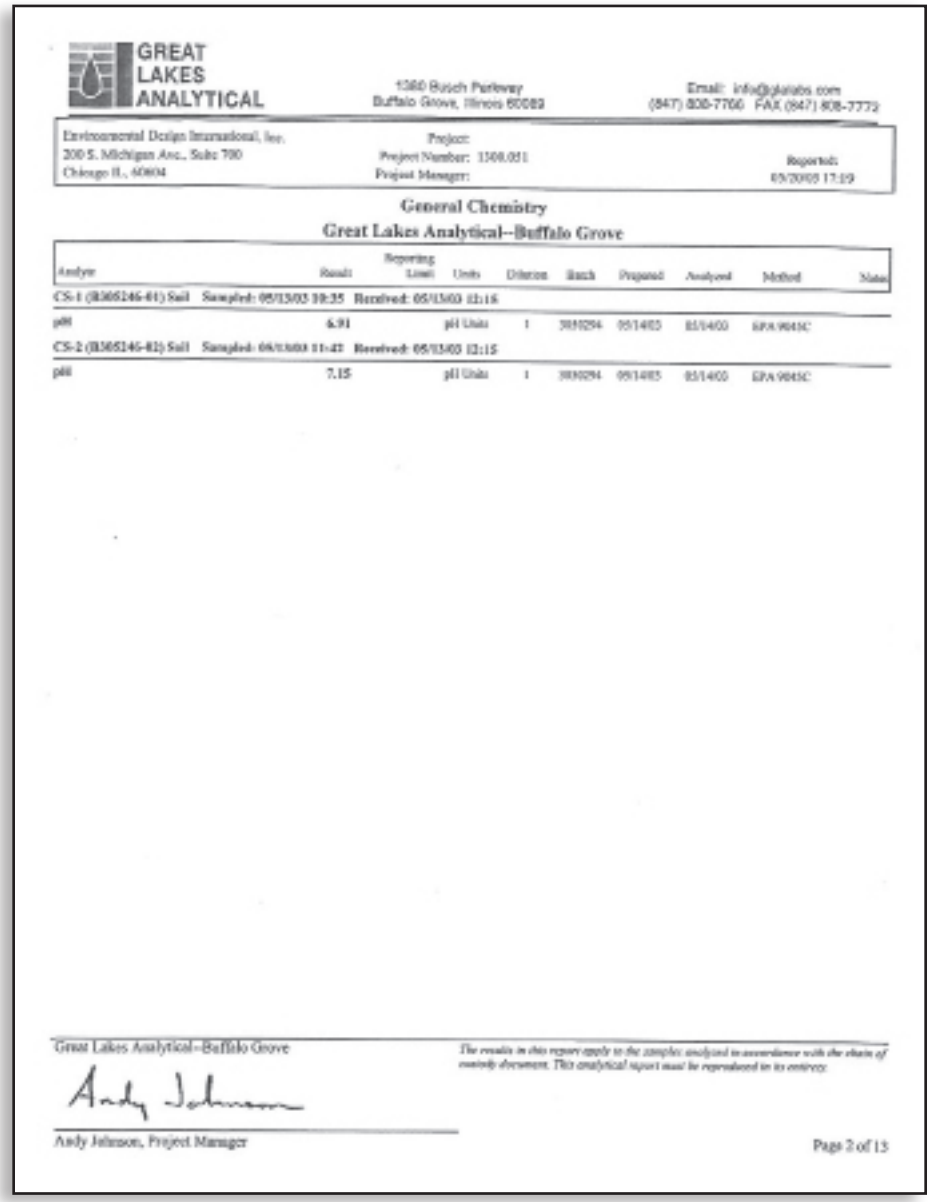
Quantity	Item Description	Checked and/or Restocked	Initials
25 or 1 box	Adhesive Bandages (assorted sizes)		
1	Adhesive Cloth Tape (10 yards x 1 inch)		
12	Antibiotic Ointment Packets		
12	Antiseptic Wipe Packets		
1 box	NonLatex Gloves		
12	Hydrocortison Ointment Packets		
1 roll	Roller Bandage (3 or 4 inches wide)		
12	Sterile Gauze Pads (3 x 3 inches wide)		
1	Scissors		
1	Tweezers		
1	Breathing Barrier with One-Way Valve		
1 bottle	Aspirin		

First Aid Kit Location _____

Food Safety Manager: _____ _____ Date: _____

Print Signature

APPENDIX K– Soil Test Results Example



GREAT LAKES ANALYTICAL

1560 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glakslabs.com
(847) 808-7766 FAX (847) 808-7772

Environmental Design International, Inc.
200 S. Michigan Ave., Suite 700
Chicago IL, 60604

Project:
Project Number: 1560.051
Project Manager:

Reported:
05/20/03 17:19

General Chemistry

Great Lakes Analytical--Buffalo Grove

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
CS-1 (B305246-01) Soil Sampled: 05/13/03 10:35 Received: 05/13/03 12:16									
pH	6.91		pH Units	1	3030294	05/14/03	05/14/03	EPA 9045C	
CS-2 (B305246-02) Soil Sampled: 05/13/03 11:42 Received: 05/13/03 12:15									
pH	7.15		pH Units	1	3030294	05/14/03	05/14/03	EPA 9045C	

Great Lakes Analytical--Buffalo Grove

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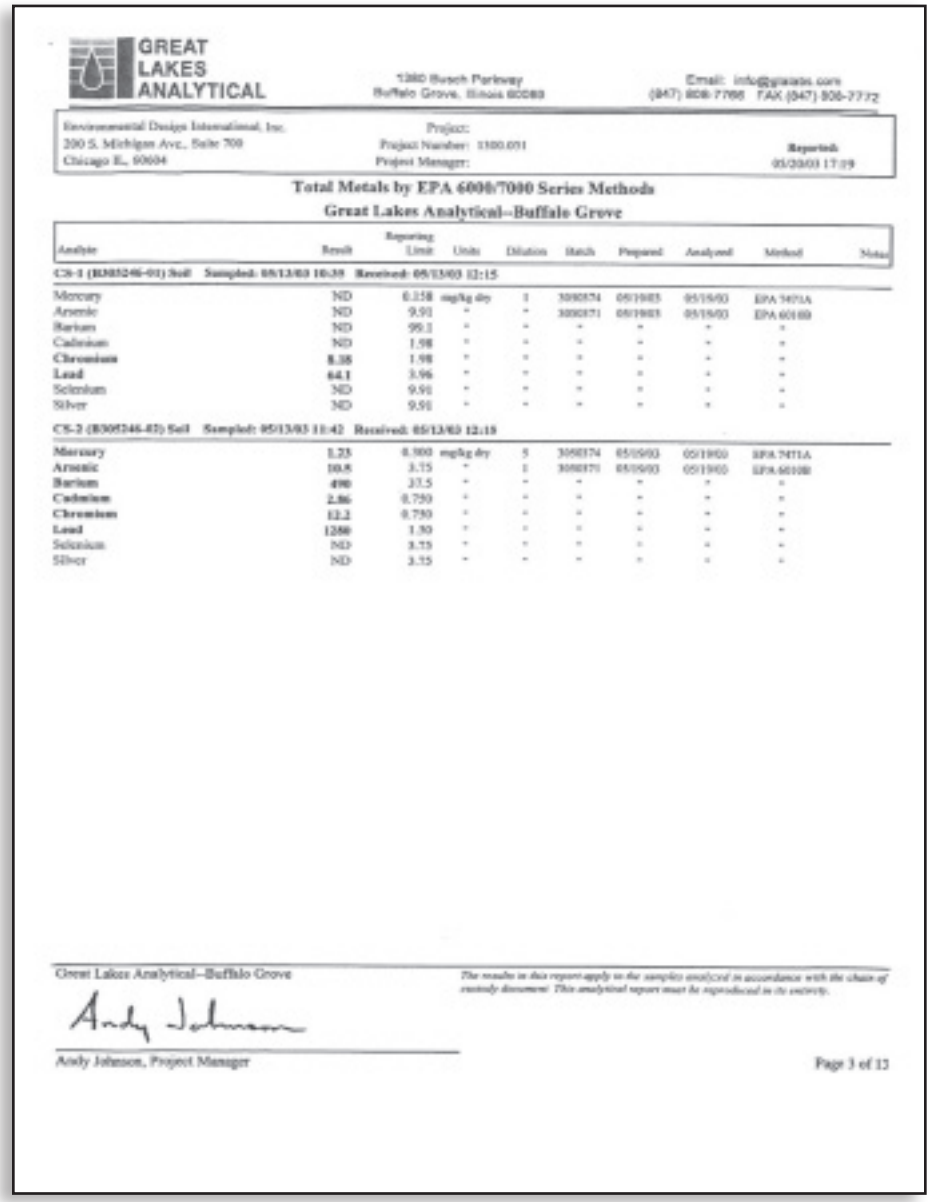
Andy Johnson, Project Manager



GREAT LAKES ANALYTICAL

1560 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glakslabs.com
(847) 808-7766 FAX (847) 808-7772

Environmental Design International, Inc.
200 S. Michigan Ave., Suite 700
Chicago IL, 60604

Project:
Project Number: 1560.051
Project Manager:

Reported:
05/20/03 17:19

Total Metals by EPA 6000/7000 Series Methods

Great Lakes Analytical--Buffalo Grove

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
CS-1 (B305246-01) Soil Sampled: 05/13/03 10:35 Received: 05/13/03 12:15									
Mercury	ND	0.158	mg/kg dry	1	3030374	05/19/03	05/19/03	EPA 7471A	
Arsenic	ND	9.91	"	"	3030371	05/19/03	05/19/03	EPA 6010B	
Barium	ND	99.1	"	"	"	"	"	"	
Cadmium	ND	1.98	"	"	"	"	"	"	
Chromium	**8.38**	1.98	"	"	"	"	"	"	
Lead	**64.1**	3.96	"	"	"	"	"	"	
Selenium	ND	9.91	"	"	"	"	"	"	
Silver	ND	9.91	"	"	"	"	"	"	
CS-2 (B305246-02) Soil Sampled: 05/13/03 11:42 Received: 05/13/03 12:15									
Mercury	**1.23**	0.300	mg/kg dry	5	3030374	05/19/03	05/19/03	EPA 7471A	
Arsenic	**10.8**	3.75	"	1	3030371	05/19/03	05/19/03	EPA 6010B	
Barium	**490**	37.5	"	"	"	"	"	"	
Cadmium	**2.86**	0.750	"	"	"	"	"	"	
Chromium	**12.2**	0.750	"	"	"	"	"	"	
Lead	**1280**	1.50	"	"	"	"	"	"	
Selenium	ND	3.75	"	"	"	"	"	"	
Silver	ND	3.75	"	"	"	"	"	"	

Great Lakes Analytical--Buffalo Grove

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Andy Johnson, Project Manager

GREAT LAKES ANALYTICAL

1380 Busch Parkway
Buffalo Grove, Illinois 60089

Email: info@glalabs.com
(847) 808-7766 FAX (847) 808-7772

Environmental Design International, Inc.
200 S. Michigan Ave., Suite 700
Chicago IL, 60604

Project:
Project Number: 1300.051
Project Manager:

Reported:
05/20/03 17:19

Polynuclear Aromatic Compounds by EPA Method 8310
Great Lakes Analytical--Buffalo Grove

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
CS-1 (B305246-01) Soil Sampled: 05/13/03 10:38 Received: 05/13/03 12:15									QC
Acenaphthene	ND	396	ug/kg dry	1	3050299	05/15/03	05/20/03	EPA 8310	
Acenaphthylene	ND	792	"	"	"	"	"	"	
Anthracene	ND	396	"	"	"	"	"	"	
Benz (a) anthracene	ND	198	"	"	"	"	"	"	
Benzo (a) pyrene	**96.4**	19.8	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	198	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	396	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	396	"	"	"	"	"	"	
Chrysene	ND	396	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	19.8	"	"	"	"	"	"	
Fluoranthene	ND	396	"	"	"	"	"	"	
Fluorene	ND	396	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	198	"	"	"	"	"	"	
Naphthalene	ND	396	"	"	"	"	"	"	
Phenanthrene	ND	396	"	"	"	"	"	"	
Pyrene	ND	396	"	"	"	"	"	"	
Surrogate: Carbazole		*53.3 %*	*18-165*		"	"	"	"	
CS-2 (B305246-02) Soil Sampled: 05/13/03 11:42 Received: 05/13/03 12:15									QC
Acenaphthene	ND	1500	ug/kg dry	10	3050299	05/15/03	05/15/03	EPA 8310	
Acenaphthylene	ND	3000	"	"	"	"	"	"	
Anthracene	ND	1500	"	"	"	"	"	"	
Benz (a) anthracene	ND	750	"	"	"	"	"	"	
Benzo (a) pyrene	**233**	75.0	"	"	"	"	"	"	
Benzo (b) fluoranthene	ND	750	"	"	"	"	"	"	
Benzo (ghi) perylene	ND	1500	"	"	"	"	"	"	
Benzo (k) fluoranthene	ND	1500	"	"	"	"	"	"	
Chrysene	ND	1500	"	"	"	"	"	"	
Dibenz (a,h) anthracene	ND	75.0	"	"	"	"	"	"	
Fluoranthene	ND	1500	"	"	"	"	"	"	
Fluorene	ND	1500	"	"	"	"	"	"	
Indeno (1,2,3-cd) pyrene	ND	750	"	"	"	"	"	"	
Naphthalene	ND	1500	"	"	"	"	"	"	
Phenanthrene	ND	1500	"	"	"	"	"	"	
Pyrene	ND	1500	"	"	"	"	"	"	
Surrogate: Carbazole		*52.9 %*	*10-163*		"	"	"	"	

Great Lakes Analytical--Buffalo Grove

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Andy Johnson, Project Manager

Page 4 of 13

GREAT LAKES ANALYTICAL

CHAIN OF CUSTODY REPORT

Client: Environmental Design International
Address: 200 S. Michigan Ave
Bill To: SAME
Address:
Report to:
E-mail:
Phone #:
Fax #:
State & Program:
Project Name:
Project #/PO#: 1300.051
Sampler:

FIELD ID, LOCATION	Date	Time	Matrix	# of bottles					LABORATORY ID NUMBER
CS-1	5/13	10:38	Soil	3	X	X	X		B305246-01
CS-2	5/13	11:42	Soil	3	X	X	X		-02

RELINQUISHED BY: 5/14 12:15
RECEIVED BY:
RELINQUISHED BY:
RECEIVED BY: 5/14/03 6:24

COMMENTS:

PAGE OF

APPENDIX L - Soil Amendment Log

Use this form to record soil amendments used (e.g., commercial compost, commercially composted manure and fertilizers). All soil amendments must be produced and applied in accordance with applicable federal, state, and local regulations. You should have documentation that verifies that soil amendments have been treated to adequately minimize pathogen risk. Documentation can be a letter of guarantee, a certificate of analysis (COA), or test results such as a compost time and temperature log. Keep this documentation with your food safety records. It is not necessary to record each application, only the types of soil amendments used.

Soil Amendment Used	Name of Soil Amendment Supplier(s)	Do you have documentation that your soil amendments are produced in accordance with applicable federal, state, and local regulations?

Food Safety Manager: _____ _____ Date: _____

Print Signature

Crop Profiles of Common Garden Produce

This guide includes recommended harvesting methods, harvesting tips, storage and transportation required temperatures. This list is not comprehensive, but includes common fruits and vegetables grown in school gardens

	Harvest Methods and Conditions	Storage & Transport (Cooling Temperature in Fahrenheit)
FRUITS		
Apples	Avoid bruised or unripe fruit; Pick when ripe. Twist apples to harvest. Should come off of tree easily when ripe.	Cool at 32-40 degrees depending on variety, cool as quickly as possible; store in cooler in crate, isolate if possible to avoid ethylene exposure to other vegetables.
Beans (green and snap varieties)	Avoid breaking stem off fruit; Harvest before they are large and tough.	45 degrees; in cooler in covered container.
Big Tomatoes	Pick fruit that is firm and without signs fruit gently to avoid bruising, break stem of injuries, shriveling, or decay. Grasp off to avoid puncturing.	60-70 degrees; do not store in cooler; line crate with newspaper; stack stem-side down and in single layer to avoid bruising.
Cherry Tomatoes	Avoid harvesting split fruit.	60-70 degrees; do not store in cooler. Use small containers to avoid crushing or splitting the fruits.
Cucumber	Avoid breaking stem off fruit; harvest before they are large or when fruit is overripe (skin starts yellowing and seeds are large and hard).	50-55 degrees; avoid damaging fruit; store in cooler in covered container.
Eggplant	Harvest fruit when shiny and firm, but not rock hard; avoid breaking stem off fruit; If eggplant is pithy or bitter, it is over mature.	46-55 degrees; store in cooler in covered container; extended exposure to dry air will cause fruit to soften.
Peas	Avoid breaking stem off fruit; harvest before they are large.	32 degrees, store in cooler.
Peppers (Hot and Sweet)	Avoid breaking stem off fruit; Peppers that are shriveled should be avoided.	45-50 degrees; store in cooler in covered container.
Cantaloupe	Cantaloupe is ready when fruit easily slips off of the vine; Also ready when color changes from green to yellow in rind and the fruit is fragrant in smell; avoid breaking stem off fruit.	36-41 degrees; store in cooler in covered container to avoid ethylene exposure to vegetables.
Watermelon	Harvest when vine tendril has dried on the melon; there is a bright yellow spot on bottom of melon; and a resonant thud or thump is made when tapped.	50-60 degrees; store in cooler in covered container to avoid ethylene exposure to vegetables.
Okra	Harvest when fruit is 2-5" long and before they are large and woody.	45-50 degrees; store in cooler in covered container.
Pears	Pick when firm and seeds are black or brown; texture should be somewhat soft and juicy.	32 degrees; store in covered container to avoid ethylene exposure to vegetables.

	Harvest Methods and Conditions	Storage & Transport (Cooling Temperature in Fahrenheit)
FRUITS		
Grapes	Harvest when fully colored and sweet; avoid harvesting fruits that are cracked or sun scalded.	32 degrees; store in covered container to avoid ethylene exposure to vegetables.
Summer Squash/ Zucchini	Avoid breaking stem off fruit. Harvest when shiny and before they are and overgrown; zucchini, yellow squash, crookneck varieties should be 5-7"; patty pan should be 3-4" in diameter; remove blossom if still attached.	41-50 degrees; store in cooler in covered container; avoid scratching.
Winter Squash	Harvest when rind is hard and solid external color; cut with pruning clippers and leave a short stem.	50-55 degrees; Can be sold immediately without curing, or can be cured for longer storage. To cure, place in a warm, ventilated, dry area for 8-10 days.
Corn	Harvest when kernels are sweet, plump, well developed and uniform in size.	32 degrees; The faster corn is cooled, the better it will hold sweetness.
ROOTS & BULBS		
Beets	Avoid breaking stems and leaves; remove leaves if stored for long periods of time.	32 degrees; store in cooler in covered container.
Carrots	Avoid breaking stems and leaves; remove tops if stored for long periods of time.	32 degrees; store in cooler in covered container.
Celery	Harvest when tender, light green, and crisp; avoid breaking stems and leaves.	32 degrees; store in cooler in covered container.
Fennel	Harvest when uniform in color and crispy; avoid breaking stems and leaves.	32 degrees; store in cooler in covered container.
Garlic	Use trowel to avoid breaking the bulb from the stem; Don't damage bulb with trowel.	32 degrees; store in cooler if uncured. Cooling is not necessary if cured. Cure in bundles of 10-12 in a warm ventilated environment for 10 days.
Leeks	Use trowel to avoid breaking the bulb from the stem; Don't damage bulb with trowel.	32 degrees; store in cooler in covered tote.
Onions	Harvest when tops begin to dry naturally; Use trowel to avoid breaking the bulb from the stem; Don't damage bulb with trowel.	32 degrees; store in cooler if green and uncured. To cure: knock down tops and let sit in field for 3-5 days(as long as it doesn't rain). Then put onions in a warm, ventilated place for 2-3 weeks to finish curing. Tops should be cut to 1-2" after curing.
Potatoes	Harvest when plant yellows and starts to die and potatoes are fully sized; Use pitchfork to harvest; avoid hitting potatoes with fork.	40-60 degrees; store in cooler
Radishes	Avoid breaking stems and leaves.	32 degrees; store in cooler in covered tote.
Turnips	Avoid breaking stems and leaves.	32 degrees; store in cooler in covered tote.

	Harvest Methods and Conditions	Storage & Transport (Cooling Temperature in Fahrenheit)
HERBS		
Basil	Use clippers to cut upper branches to encourage bushiness and side growth; try to harvest before flowering.	55 degrees; do not store in cooler as leaves may blacken.
Cilantro	Cut 4-6" stems and bunch with rubber band or twist tie; harvest before plant goes to seed.	35 degrees; store in cooler, set upright in ½" water in a bucket.
Dill	Cut 4-6" stems and bunch with rubber band or twist tie; harvest before plant goes to seed.	40-45 degrees; store in cooler, set upright in ½" water in a bucket.
Parsley	Cut 4-6" stems and bunch with rubber band or twist tie.	40-45 degrees; store in cooler, set upright in ½" water in a bucket.
BRASSICAS		
Broccoli	Harvest when head is firm, dark blue or green, and 4-6" in diameter; harvest before buds start to flower; cut main stalk with knife.	32 degrees; store in cooler.
Cauliflower	Harvest when head is white to cream in color, firm, and compact; cut main stalk with knife.	32 degrees; store in cooler.
Brussel Sprouts Cabbage	Harvest when sprouts are 1-2" in diameter; Pinch off the top of the plant when lower sprouts are ½" in diameter to allow better sprout growth. Cut main head with knife. The cabbage should feel very firm and the cabbage head's leaves should be tight.	32 degrees; store in cooler.
Kohlrabi	Cut the bulb from the root; avoid harvesting mature kohlrabi as it can be tough and woody; remove leaves from bulb.	32 degrees; store in cooler.
Greens (Chard, Collards, Kale, Asian, Mustard)	Harvest only the bottom outside leaves; Don't cut new growth; avoid harvesting old and yellow leaves.	32 degrees; store in cooler.
LETTUCE AND MIXES		
Cutting Greens and Leaf Lettuce	Use knife to cut lettuce leaves; Cut section evenly leaving at least 2-3" at the base for new growth. Harvest as early in morning as possible.	32 degrees; store in cooler.
Head Lettuce	Use knife to cut off at roots; pull off yellow or damaged leaves; harvest as early in the morning as possible.	32 degrees; store in cooler.
Spinach	Use knife to cut large outside leaves; Don't cut new growth; harvest as early in the morning as possible; avoid harvesting yellow or damaged leaves.	32 degrees; store in cooler.

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