ADDENDUM C

Sanitation & Hygiene: Zero to Full Competency

Curious how Tier, Stage, and Phase relate? See the Glossary.

Why This Addendum Exists

Chapter 4 tells you what to stock and do at each tier of a disruption. It does not tell you how to actually become competent at disease prevention and waste management when professional services are delayed, unavailable, or gone entirely. This addendum is a skill-building curriculum for exactly that: a structured path from no relevant sanitation knowledge to genuine, tested competency, built from real practice, reference material, and hands-on repetition.

It's organized by skill stage, not by disaster duration, following the same structure as Addendum A. Treat the self-check at the end of each stage as the actual gate, not the time spent.

Four stages: Foundations (basic safe practice), Applied Practice (hands-on competence), Self-Sufficiency (independent, resilient skill), and Mastery & Teaching (able to teach others and operate at community scale). This addendum's companion, Addendum C: Medical Care, runs the same four-stage structure for treating injury and illness; the two are meant to be worked through side by side.

Stage 1: Foundations (Awareness)

Goal: know the core safety facts well enough to not make a sanitation situation worse, and understand the landscape of what's ahead. This stage is readable in a weekend.

Core Knowledge

The core concept at this stage is the fecal-oral transmission route: most disaster-related disease outbreaks (cholera, dysentery, hepatitis A, norovirus) spread because human waste contaminates water or food, not through the air. This is why Chapter 4's Tier 1 guidance on toilet alternatives and handwashing matters more than it might seem; proper waste containment and consistent handwashing (soap and water, or hand sanitizer when water is scarce) break this transmission route more effectively than almost any other single intervention. Understand the difference between

greywater (from washing, generally lower-risk) and blackwater (toilet waste, genuinely hazardous) and why they need separate handling.

Stage 1 Learning Path

Resource	Cost / Format	Notes
CDC Emergency Wound Care and Disease Prevention guidance	Free, online	cdc.gov. Covers the reasoning behind Chapter 4's Tier 1 sanitation guidance.
Where There Is No Doctor (Hesperian Health Guides)	Free PDF, or ~$30 print	hesperian.org. The standard lay-accessible reference already cited in Chapter 4; read the sanitation and water sections first.

Stage 1 Practice Exercises

- **Map your household's waste plan:** Walk through exactly what your household would do for toilet needs if water and sewer were both down for a week, start to finish, including where waste would actually go.
- **Read the Hesperian sanitation chapter:** Read Where There Is No Doctor's sanitation and water sections in full, not a summary.

Self-Check: Ready for Stage 2?

You should be able to explain why handwashing and waste containment matter more than almost any single medical intervention for preventing disaster-related illness, and describe the difference between greywater and blackwater without looking it up.

Stage 2: Applied Practice (Competent)

Goal: move from knowing the theory to having actually built and run a no-power sanitation setup under real, if low-stakes, conditions.

Applied Practice

- **Build and test a no-power sanitation setup:** Actually assemble and use Chapter 4's Tier 1 toilet-alternative setup (bucket toilet, kitty litter/sawdust cover material, doubled heavy-duty bags) for a full weekend as a dry run, not just as stored supplies. See the Bathroom & Hygiene Without Running Water skill guide for the full setup and hygiene routine.
- **Practice actual lime-treatment dosing:** Chapter 4's Tier 2 alkaline treatment (roughly 1-2 cups hydrated lime per 5-gallon bucket, held 2+ hours) is a real, fast pathogen-kill method, not just odor control, but the dose matters. Practice measuring and mixing it correctly, with real PPE (gloves, mask, eye protection), before you're doing it for the first time under pressure.
- **Practice water disinfection alongside general hygiene:** Cross-reference Addendum A's water treatment practice; the same treated water needs to be used correctly for hand hygiene and cleaning, not just drinking.
- **Set up a real greywater plan:** Identify specifically where greywater from bathing or laundry would be disposed of on your property without contaminating a garden bed or water source; kitchen sink water carries food particles and grease and needs the same disposal as blackwater, not this lighter system. See the Greywater Disposal Basics skill guide for the mulch basin design and which soaps are actually safe to use.

Stage 2 Learning Path

Resource	Cost / Format	Notes
Bathroom & Hygiene / Composting Toilets skill guides (this site)	Free	The practical how-to behind the Tier 1-2 sanitation setup this stage requires.
A stocked, tested bucket-toilet kit	$40–$100 depending on scope	5-gallon buckets, sealing lids, cover material, and treatment-grade hydrated lime, actually assembled and run for a full weekend, not just purchased.

Self-Check: Ready for Stage 3?

You should have run at least one full weekend on your no-power sanitation setup, correctly measured and mixed a hydrated-lime treatment dose with real PPE, and identified a real greywater disposal plan on your own property. Reading the material without actually running the setup is still Stage 1 competency.

Stage 3: Self-Sufficiency (Proficient)

Goal: genuine independence from municipal sanitation infrastructure for extended stretches, the actual skill level Chapter 4's Tier 2 and Tier 3 assume a household has. This stage produces skills that hold up when there's no sewer service to fall back on.

Self-Sufficiency

- **Design a real long-term sanitation system:** Move beyond the bucket-toilet dry run to understanding and building toward Chapter 4's Tier 3 humanure composting system: proper carbon-material layering, the extended aging period required before safe use, and why it must stay separate from any food-crop soil system until fully processed. If pyrolysis-based treatment (heating waste to destroy pathogens in hours instead of a year) is part of your plan, research actual equipment, a sealed retort with verified sustained temperature, not an improvised burn setup, before trusting the output near food crops. See the Composting Toilets: Humanure, Vermicomposting & Incineration skill guide for the real pathogen die-off science and the actual carbon-to-nitrogen ratio behind that layering.

- **Evaluate vermicomposting and incinerating toilets:** Two more real, validated options beyond passive aging: a worm-assisted (vermicomposting) system cuts disease-indicator organisms dramatically and speeds up processing, though it's a pretreatment step that still needs final disposal or aging, not a standalone finish line; an incinerating toilet burns waste to sterile ash after each use, the most hands-off option, but depends on a steady fuel or power supply, a real cost to weigh against Addendum D's energy planning. The same skill guide covers current incinerating-toilet costs and the specific worm species vermicomposting actually uses.

- **Understand outbreak recognition and response:** Learn to recognize the early signs of the specific diseases that actually spread in disaster sanitation failures (cholera, dysentery, hepatitis A) and know the household-level response (aggressive rehydration, isolation, disinfection) versus when it's a true emergency requiring evacuation to care regardless of tier. The Isolating a Sick Household Member skill guide covers the actual isolation setup once someone in the household is infected, and is shared with this addendum's companion, Medical Care.

- **Cross-train with the Water addendum:** Sanitation failure and water contamination are the same underlying problem from two directions; Addendum A's Stage 3 water sourcing and treatment skills directly support this stage.

- **Build real soap-making skill, not just a stocked-supplies plan:** Chapter 4's Tier 3 already calls for soap-making as the skill behind a self-sustaining hygiene supply; Stage 3 is where you

actually run a real recipe through a lye calculator, practice lye safety hands-on, and make at least one full, properly cured batch, rather than treating lye and fats as materials sitting on a shelf. See the Soap Making: Lye & Oils skill guide for the real chemistry, lye-safety practice, and the wood-ash lye method for when buying lye isn't an option.

Stage 3 Learning Path

Resource	Cost / Format	Notes
The Humanure Handbook (Joseph Jenkins)	Free PDF or ~$25 print	humanurehandbook.com. The actual source text behind Chapter 4's Tier 3 composting method; read in full at this stage, not just the summary.
Where There Is No Doctor (full study, sanitation chapters)	Free PDF or ~$30 print	hesperian.org. By Stage 3, read the sanitation and disease-prevention material cover to cover rather than as a reference lookup.

Self-Check: Ready for Stage 4?

You should understand your household's full long-term sanitation system (humanure composting, greywater, disease response) well enough to build and maintain it without a reference, and be able to explain the actual carbon-to-nitrogen ratio and aging period behind the composting method you're using.

Stage 4: Mastery & Teaching (Expert)

Goal: the ability to teach others reliably, coordinate waste-management response at a community scale, and hold professional-level credentials where they exist. This is the stage Chapter 4's Tier 4 (neighborhood waste infrastructure) actually depends on.

Teaching & Certification

- **Complete CERT (Community Emergency Response Team) training:** CERT is free, offered by nearly every Wasatch Front city (Salt Lake City, South Salt Lake, West Valley City, American Fork, and more, usually through the local fire department), and trains civilians in fire safety, light search and rescue, team organization, and disaster medical operations. This is the single best community-scale on-ramp in this entire addendum, and it's free.

- **Pursue a professional environmental health credential if sanitation work is becoming a real vocation:** The National Environmental Health Association's Registered Environmental Health Specialist / Registered Sanitarian (REHS/RS) credential is the real, recognized professional credential for environmental health and sanitation work nationally, requiring a relevant degree, supervised experience, and a certification exam; appropriate if this is becoming a genuine vocation, not a general expectation.

Community-Scale Practice

- **Become a CERT team lead or instructor:** CERT programs are built to be taught by graduates; moving into a team-lead or instructor role is the direct mechanism for turning personal training into neighborhood-level capability.
- **Build the neighborhood waste-siting plan described in Chapter 4's Tier 4:** Chapter 4 calls for neighborhood-scale waste and composting sites, sited well away from any shared water source, and more than one trained steward who understands the system. Stage 4 is where you're capable of siting, building, or teaching that system rather than just listing it as a goal.
- **Prepare the community for death without a funeral home available:** Chapter 4's Tier 4 community sanitation response also has to account for death itself when professional services are gone; the Death, Burial & Body Disposition skill guide covers the death-certificate process, body preservation without embalming, and the real, state-and county-dependent rules around burial on private land.

Stage 4 Learning Path

Resource	Cost / Format	Notes
CERT (Community Emergency Response Team)	Free	Search "[your city] CERT training"; Salt Lake City, South Salt Lake, West Valley City, and most Wasatch Front cities run their own free programs through local fire departments.
NEHA Registered Environmental Health Specialist / Sanitarian (REHS/RS)	Course/exam fees vary	neha.org. The professional credential for environmental health and sanitation work, if pursued as a vocation.

Self-Check: Have You Actually Arrived?

The real test of Stage 4 isn't a certification stack; it's whether you've actually run or assisted a CERT drill, and whether your neighborhood has an actual sited, agreed-upon waste plan with more than one person who knows how to run it, because you helped build it. If the environmental health credential above fits your interests, completing it is a genuine bonus toward Stage 4 readiness, not a requirement for it.

A Suggested Learning Sequence

As a rough guide, not a requirement:

- **Weeks 1–2:** Stage 1: read the core references and map your household's waste plan.
- **1–3 months:** Stage 2: run a full weekend on your no-power sanitation setup, and practice hydrated-lime treatment dosing.
- **6–12 months:** Stage 3: design and begin building your long-term humanure composting system, and read The Humanure Handbook cover to cover.
- **Ongoing:** Stage 4: complete free CERT training, help site or maintain your neighborhood's waste plan, and consider a professional environmental health credential if this is becoming a real vocation.

At a Glance: Sanitation & Hygiene Deep Dive

A single-page reference for planning purposes. This does not replace the detailed guidance above; use it to see how the four stages scale, and cross-reference against Chapter 4's tiers, which describe what a household needs to have and do rather than how skilled it needs to be.

Stage	Focus	Key Milestone	Primary Resource
Stage 1: Foundations	Core sanitation logic, no hands-on requirement yet	Can explain the fecal-oral route and greywater/blackwater distinction from memory	CDC guidance, Hesperian's Where There Is No Doctor
Stage 2: Applied Practice	Hands-on setup and low-stakes repetition	Ran a full no-power sanitation weekend; practiced hydrated-lime dosing	Bathroom & Hygiene skill guide
Stage 3: Self-Sufficiency	Independent, self-sustaining waste management	Long-term humanure composting system designed and understood without a reference	The Humanure Handbook
Stage 4: Mastery & Teaching	Teaching others, community/professional scale	Completed CERT; helped site or maintain a neighborhood waste plan	CERT, NEHA REHS/RS