

ENERGY HYGIENEX

WATER ENERGY HYGIENE® FOUNDATIONS

Water Life and the Pathways from Source to People

A Reader's Guide within Lifestyle Energy Hygiene®



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Water Energy Hygiene® Foundations

A Reader's Guide within Lifestyle Energy Hygiene®

Aura Research Foundation

AURA RESEARCH FOUNDATION

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Hyderabad Telangana India

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The cover photographs are explanatory illustrations drawn from the Water Energy Hygiene public-awareness brochure. They are not study records or proof of outcome.

Research Status and Responsible Use

This reader book combines established knowledge about water with an investigational framework proposed by Aura Research Foundation. The evidence level of each statement matters.

Established knowledge. Water chemistry, microbiology, physiology, plant science, aquaculture science and recognised water-safety practices provide the scientific foundation of the book.

Investigational framework. Water Energy Hygiene, WERRH, OMRDA assessments, the proposed 400 to 752 Hz adaptive interval, outside-band nonadaptive classifications and within-band deficit remain Foundation-defined research constructs. They are not established biological limits or measured emissions from water.

Preliminary observations. Reports concerning selected water samples, short-term human assessments, irrigation, plant and food pathways, and aquaculture output are starting observations. They do not establish causation, clinical benefit, superior nutrition, food quality or improved human health.

Safety remains primary. No investigational reading may declare unsafe water safe, replace accredited microbiological, chemical, mineral, radiological or toxicological testing, or justify reducing necessary filtration, disinfection or treatment. Applicable drinking-water, agricultural, aquaculture, food-safety and medical guidance must be followed.

Specific UV boundary. Foundation observations involving selected UV-treated samples must not be generalised to UV disinfection as a method. UV treatment needed for safety should not be rejected on the basis of an investigational classification.

This book is for education, public awareness and research collaboration. It does not provide medical diagnosis or treatment, drinking-water certification, agricultural advice, aquaculture advice, food-safety advice or nutritional advice.

Dedication

*To those who protect water, cultivate food, care for aquatic life
and pursue difficult questions with responsibility.*

Founders Note

Water enters human life through more than a glass. It reaches us directly through drinking and indirectly through crops, harvested food, fish and other edible aquatic organisms. Before use, it carries a history of source, treatment, transport, storage, container, time and surroundings. We believe that this complete history deserves careful attention.

Our wider work on Energy Hygiene led us to ask whether selected defined exposures are followed by repeatable assessment responses in water, whether any recorded response persists, and whether measurable biological or production outcomes follow. We have reported preliminary observations involving direct intake, irrigation and aquaculture. These reports are a starting register, not proof.

This book keeps established water science, Foundation observations and working hypotheses visibly separate. It welcomes positive, negative, mixed and null findings. Conventional water safety, necessary treatment, food safety, aquaculture standards and medical care remain primary throughout.

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Preface

Water is usually discussed through separate questions. Is it safe to drink? Is it suitable for irrigation? Can an aquaculture pond support healthy stock? How should water be treated and stored? Each question is important, but people also benefit from seeing the whole pathway.

Water Energy Hygiene is presented here as part of Lifestyle Energy Hygiene, the third pillar of the Energy Hygiene Framework. Drinking water and hydration are everyday lifestyle inputs. The source, Earth, treatment and surroundings connect the subject with Environmental Energy Hygiene. Foundation reports of short-term human assessment responses create a research link with Personal Energy Hygiene. Irrigation and aquaculture extend the pathway through food.

The book therefore follows water from source to use and then along three routes: directly to people; through soil, plants and harvested food; and through ponds or tanks, fish and other edible aquatic organisms. The route does not establish that an investigational frequency transfers from water to a person. It identifies where recognised measurements, exposure records and controlled comparisons are needed.

The first two parts provide the framework and established water science. The third explains the Foundation's operational classifications, WERRH and preliminary observations. The fourth turns the questions into measurement and research designs. The final part explains how readers, institutions and investigators can interpret results and collaborate responsibly.

The central public-awareness message is practical: protect conventional water quality and safety, document the complete water history, and test additional claims with transparent methods. The proposed 400 to 752 Hz interval and related classifications remain investigational unless and until reproducible evidence establishes more.

How to Use This Book

Read Parts One and Two first if the framework or water science is new to you. In later chapters, use the evidence label to identify whether a passage describes established science, a Foundation observation, an operational definition, a working hypothesis or a proposed study.

- Treat photographs and pathway diagrams as explanatory unless a caption identifies a verified study record.
- Keep safety decisions separate from investigational readings. Use accredited testing and applicable professional guidance.
- Use Parts Four and Five to understand controls, replication and the roles available to research collaborators.

Evidence Language Guide

Evidence label	How to read the statement
Established science	Supported by authoritative or peer-reviewed water, biological or public-health sources.
Foundation observation	A pattern reported by Aura Research Foundation. It is not proof of causation or benefit.
Operational classification	A Foundation-defined assessment category used to organise a test. It is not a safety grade or biological limit.
Working hypothesis	A proposition that may be supported, modified or rejected by controlled research.
Proposed study	A design using coding, controls, recognised measurements, predefined outcomes and replication.
Reader boundary	A limit that prevents research language from becoming medical, safety, treatment or certification advice.

Water Energy Hygiene within the Three Pillars

Water Energy Hygiene belongs primarily within Lifestyle Energy Hygiene. It is not a fourth pillar. Its complete pathway also crosses environmental conditions, investigational personal responses and food systems.

PILLAR 1 ENVIRONMENTAL ENERGY HYGIENE Source water, Earth, structures, objects and surroundings	PILLAR 2 PERSONAL ENERGY HYGIENE The individual's proposed adaptive condition	PILLAR 3 LIFESTYLE ENERGY HYGIENE Water, nutrition, sleep, activity and constructive habits
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Figure 1 The three pillars of Energy Hygiene

Primary home	Cross-cutting links
Lifestyle Energy Hygiene	Environmental source and exposure history; Personal Energy Hygiene research observations; AHEH plant-food route; aquaculture-food route.

Figure 2 Water Energy Hygiene within Lifestyle Energy Hygiene

Three Routes from Water to People

Direct intake Source → treatment → storage → drinking water → human

Plant and food Water → soil and seed → plant → harvested food → human

Aquaculture food Water → pond or tank → aquatic organism → food → human

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Abbreviations and Key Terms

Abbreviation	Meaning	Abbreviation	Meaning
AFCIW	Adaptive Frequency-Conditioned Irrigation Water	OMRDA	Operator-Mediated Resonance Detection Apparatus
AHEH	Agro Horticultural Energy Hygiene	ORP	Oxidation reduction potential
ARF	Aura Research Foundation	TDS	Total dissolved solids
DO	Dissolved oxygen	UV	Ultraviolet
Hz	Hertz	WEH	Water Energy Hygiene
WERRH	Water Exposure Response and Retention Hypothesis	WP	Work package

Operational Frequency Map

BELOW 400 Hz Proposed nonadaptive classification	400 TO 752 Hz INCLUSIVE Proposed adaptive interval	ABOVE 752 Hz Proposed nonadaptive classification
--	--	--

These are Foundation-defined operator-mediated classifications. They are not established biological limits or measured emissions from water.

Within-band deficit. A reduced response recorded at a nominated setting inside 400 to 752 Hz. It is a response-strength description, not a separate frequency zone.

WERRH. The testable proposition that a defined exposure may be followed by a reproducible water response and possible time-limited retention. It does not assume water memory.

OMRDA. An operator-mediated investigational apparatus and procedure. It is not a conventional water-quality test or direct photon detector.

AFCIW. An operational term for irrigation water exposed to a selected proposed adaptive setting under documented conditions.

Water and Everyday Life

Reader question *Why does water deserve attention as a complete pathway rather than only at the point of drinking?*

Before breakfast, water has already entered the day many times. It has been drawn from a source, treated and carried to a home. It may be poured into a glass, used to prepare food, move through soil and roots in a field, or circulate through a pond where fish are raised.

Water is a biological necessity. It supports normal body function and is also a shared medium across homes, agriculture and aquatic production. By the time a meal reaches the table, water may have reached a person directly through drinking or indirectly through plant and aquatic food. [1]



Opening montage Water reaches people directly and through cultivated and aquatic food. Explanatory photographs; not study records.

ESTABLISHED SCIENCE

Water Before It Reaches Us

Most people meet water at a tap, bottle, tank or well. Its history begins earlier. Rainfall, rivers, reservoirs and groundwater interact with geology, land use and human activity. Water may then pass through treatment, pipes, vehicles, tanks, household filters and containers before it is used.

Recognised drinking-water practice manages risk from catchment to consumer. Source protection, fit-for-purpose treatment, safe distribution and hygienic storage work together. Appearance alone cannot establish microbiological or chemical safety; applicable standards and accredited testing remain essential. [2]

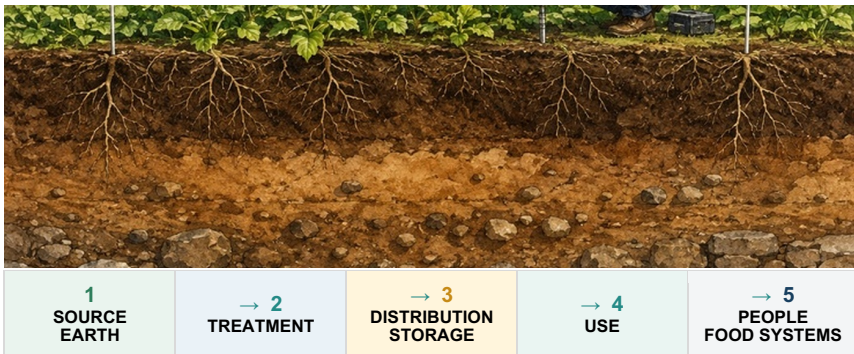


Figure 3 The complete water history from source to use

A useful record follows the batch. It identifies the source and intended use; records treatment, transport, storage, container and time; and notes surrounding conditions that could alter or confuse a later comparison.

This history is not an Energy Hygiene score. It provides the context needed to judge recognised risks and to prevent ordinary differences between samples from being mistaken for an investigational effect.

ESTABLISHED PATHWAYS

Three Routes from Water to People

The routes meet at the person, but each route has a different sequence of biological, environmental and production factors. Following the route makes those factors visible.



Figure 4 Three routes from water to people

Direct intake. Drinking water enters the body after its source, treatment, distribution and storage history. Recognised drinking-water standards and testing govern safety.

Plant and food route. Irrigation water interacts with soil, roots, seed, crop management and weather before harvest. Growth, yield, composition and food safety have many possible influences that must be measured or controlled. [3]

Aquaculture food route. Pond or tank water is the living environment for cultured aquatic organisms and part of the production system. Species, stocking, feed, husbandry, temperature, dissolved oxygen, pH and other water-quality conditions can influence output. [4]

Fit-for-purpose controls. Drinking-water safety, irrigation suitability and aquaculture water quality are assessed for different purposes. A responsible comparison defines the route first, then selects the recognised measurements and outcomes that belong to it.

These pathways show where observations and measurements can be made. They do not show that a frequency, energy condition or benefit transfers from water through food to a person.

WATER ENERGY HYGIENE RESEARCH QUESTION

An Additional Research Question

Water Energy Hygiene® belongs primarily within Lifestyle Energy Hygiene®, the third pillar of the Energy Hygiene Framework. At this stage it asks whether, after recognised water-quality differences and the complete exposure history are controlled, a defined exposure is followed by a repeatable response in water or a measurable outcome along one of the three routes. [5]

This is a question, not an established property of water. The Foundation's proposed 400 to 752 Hz inclusive adaptive interval, outside-band nonadaptive classifications and operator-mediated assessments are investigational. They are not safety grades, established biological limits or measured emissions from water.

Table 2 Established quality exposure history and investigational response

Level	What receives attention	What it can establish
Recognised quality and safety	Source and intended use; microbiological, chemical, mineral, radiological and toxicological quality; required treatment	Suitability, risk and compliance within applicable standards
Exposure history	Treatment, storage, container, transfer, time and surrounding conditions	Comparison context and possible confounding factors
Investigational response	Coded samples, a defined exposure, sham or off-target controls, and predefined measurements	A positive, negative, mixed or null research result; never a safety judgement

What this chapter does not claim. It does not claim water memory, healing, improved nutrition, superior food, increased aquaculture production or a causal transfer from water to people. Foundation observations remain starting observations for controlled research.

Reader takeaway. Protect water quality and safety first. Record the whole journey from source to use. Treat every additional Energy Hygiene proposition as a testable question that must allow positive, negative, mixed or null findings.

Selected Sources

[1] Institute of Medicine. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. National Academies Press, 2005.

[2] World Health Organization. Guidelines for drinking-water quality: fourth edition incorporating the first and second addenda, 2022.

[3] Food and Agriculture Organization of the United Nations. The State of Food and Agriculture 2020: Overcoming water challenges in agriculture, 2020.

[4] Food and Agriculture Organization of the United Nations. The State of World Fisheries and Aquaculture 2024: Blue Transformation in action, 2024.

[5] Aura Research Foundation. Water Energy Hygiene: Public Awareness and Research Collaboration Brochure, 2026.

PART ONE WATER LIFE AND FRAMEWORK

CHAPTER 2

The Energy Hygiene Framework

Reader question *How do Environmental, Personal and Lifestyle Energy Hygiene relate to one another?*

At a breakfast table, one glass of water can be viewed in three ways. The room, water source, container and surrounding conditions form the setting. The person drinking the water has an individual condition. The choice to drink, the meal, sleep and activity belong to daily life.

Aura Research Foundation uses the Energy Hygiene Framework to keep these viewpoints distinct while recording their links. The pillars organise where a question begins: around the person, in an investigational assessment of the person, or within daily inputs and habits. [3]

PILLAR 1 ENVIRONMENTAL ENERGY HYGIENE®	PILLAR 2 PERSONAL ENERGY HYGIENE®	PILLAR 3 LIFESTYLE ENERGY HYGIENE®
SETTING Earth, water sources, built space, structures, objects and surroundings	INDIVIDUAL The Foundation's investigational view of a person's proposed adaptive condition	DAILY LIFE Water, nutrition, sleep, activity and constructive habits

Framework overview The three pillars examine setting, individual condition and daily life.

The framework is Foundation-defined and investigational. It is not a recognised medical model or an established public-health classification. Physical hygiene, water and food safety, and conventional healthcare retain their own standards and responsibilities.

PURPOSE AND BOUNDARIES

What the Framework Is For

A framework helps readers organise a complex subject before deciding what should be measured. Here, it separates three questions: What conditions surround the person? What individual response is being proposed or recorded? Which daily inputs and habits are involved?

This separation can help define variables, records, comparison groups and research hypotheses. It cannot by itself establish a cause of illness, validate an instrument, prove a treatment effect or create a public-health recommendation. Those conclusions require appropriate scientific and clinical evidence.

Relationship to Physical Hygiene and Care

- Physical hygiene and sanitation address recognised physical contamination and infection-control needs. Established practices such as hand hygiene remain essential. [1]
- Conventional healthcare assesses symptoms, diagnoses illness and provides evidence-based treatment. Energy Hygiene assessment must not replace or delay this care.
- Water and food safety are governed by applicable quality standards, treatment requirements and accredited testing. An investigational reading cannot certify safety. [2]

Physical hygiene and conventional care remain primary
Energy Hygiene can organise additional research questions

Complementary and Investigational

Complementary means that the framework may sit alongside established practice without weakening, replacing or delaying it. Investigational means that its proposed concepts, classifications and assessment methods require controlled study, transparent reporting and independent replication.

Responsible use keeps three evidence levels visible: established knowledge, observations reported by the Foundation and hypotheses still awaiting validation. A statement should never move from one level to another merely because it sounds plausible.

FRAMEWORK IN PRACTICE

The Three Pillars in Practice

PILLAR 1

Environmental Energy Hygiene

This pillar concerns the setting in which people and water exist. Within the Foundation framework, it includes Earth and geology, water sources, buildings, structures, objects, equipment and surrounding conditions. Water treatment, transport and storage environments also belong to this view when the question concerns the setting.

Recognised environmental measurements should be recorded first. Any additional Energy Hygiene classification remains a Foundation-defined research proposition and should not be confused with an established environmental hazard standard.

PILLAR 2

Personal Energy Hygiene

This pillar holds the Foundation's investigational view of an individual's proposed adaptive condition. Operator-mediated assessments may be recorded as research observations, but they are not established physiological measurements, clinical biomarkers or medical diagnoses.

A controlled study can compare coded assessments with recognised measures, fixed time points and predefined outcomes. Repetition and independent review are needed before any broader interpretation is made.

PILLAR 3

Lifestyle Energy Hygiene

This pillar concerns daily inputs and habits: water and hydration, food and nutrition, sleep, physical activity and constructive routines. These subjects already have recognised health guidance. The Foundation framework adds questions about whether defined exposures or conditions are followed by repeatable investigational or recognised outcomes.

Water can therefore appear in all three viewpoints. Source and surroundings create an environmental link; a proposed individual response creates a personal research link; drinking and hydration create the primary lifestyle link. Chapter 3 explains why Water Energy Hygiene belongs mainly in this third pillar.

INTEGRATION AND RESPONSIBLE USE

How the Pillars Work Together

One event can involve all three pillars. Drinking a glass of water has a source and storage history, occurs in an individual, and forms part of daily hydration. The framework helps researchers record these aspects without treating them as the same variable.

One Glass of Water

SETTING Source, treatment, storage and surroundings	INDIVIDUAL Predefined investigational observations	DAILY INPUT Drinking, timing and hydration context
---	--	--

The three viewpoints must be documented separately. If the source, container, intake timing and assessment procedure all change together, the cause of any observed difference cannot be identified. A useful study holds relevant conditions constant, changes one defined factor and permits positive, negative, mixed or null results.

Evidence and Responsible Use

What this chapter does not claim. The three pillars do not prove that an unseen energy caused illness, that a Foundation assessment is a diagnosis, or that an Energy Hygiene intervention prevents or treats disease.

Reader takeaway. Environmental Energy Hygiene concerns the setting. Personal Energy Hygiene concerns the Foundation's investigational view of individual condition. Lifestyle Energy Hygiene concerns daily inputs and habits. The framework connects them while keeping their roles and evidence limits visible.

The next chapter places Water Energy Hygiene within Lifestyle Energy Hygiene and explains its environmental, personal, plant-food and aquaculture links.

Selected Sources

[1] World Health Organization. WHO Guidelines on Hand Hygiene in Health Care, 2009.

[2] World Health Organization. Guidelines for drinking-water quality: fourth edition incorporating the first and second addenda, 2022.

[3] Aura Research Foundation. Energy Hygiene: The Missing Link in Health. The Story of Personal, Environmental and Lifestyle Energy Hygiene, 2026.

[4] Aura Research Foundation. Water Energy Hygiene Foundations A5 Book Master Design, 2026.

PART ONE WATER LIFE AND FRAMEWORK
CHAPTER 3

Water within Lifestyle Energy Hygiene

Reader question *Why is Water Energy Hygiene part of the third pillar rather than a fourth pillar?*

Water Energy Hygiene has its primary home in Pillar Three, Lifestyle Energy Hygiene, because drinking, hydration and water-linked food pathways are repeated parts of daily life. It is a cross-cutting research concept within Lifestyle Energy Hygiene. It is not a fourth pillar. [5,6]

This position does not isolate water from the rest of the framework. Source, Earth, treatment, storage and surroundings create environmental links. A predefined observation in the person creates a personal research link. Intake, hydration and nutrition keep the concept centred in daily life.

PILLAR 1 ENVIRONMENTAL ENERGY HYGIENE®	PILLAR 2 PERSONAL ENERGY HYGIENE®	PILLAR 3 LIFESTYLE ENERGY HYGIENE®
CROSS-CUTTING LINK Source, Earth, treatment, storage and surroundings	RESEARCH LINK Predefined short-term observations in the individual	PRIMARY HOME Daily water, hydration, food and nutrition pathways

Framework map Pillar Three is the primary home; Pillars One and Two provide cross-cutting links.

Primary home describes where the concept is organised. It does not establish a mechanism, validate an assessment method or create a medical or public-health claim.

PRIMARY HOME IN PILLAR THREE

Water as a Daily Lifestyle Input

Water is essential to normal human physiology. People obtain it through drinking water, other beverages and foods, while individual needs vary with age, activity, climate, health and diet. Established hydration guidance and individual medical advice remain the first reference points. [1]

Lifestyle Energy Hygiene concerns repeated inputs and habits. In this framework, the water domain therefore includes daily intake, hydration routines, water used in food preparation and the water-dependent pathways through which plant and aquatic foods reach people.

Why the Location Matters

- It preserves the approved three-pillar Energy Hygiene Framework.
- It places water beside nutrition, sleep, activity and other repeated lifestyle inputs.
- It still allows environmental conditions and individual observations to be recorded separately.

The Organising Rule

QUESTION BEGINS WITH	VIEWPOINT	EXAMPLE
SOURCE OR SETTING	Environmental	Well, river, geology, treatment system, tank or surrounding conditions
INDIVIDUAL RESPONSE	Personal	A predefined, investigational before-and-after assessment in a person
DAILY INPUT OR USE	Lifestyle	Drinking, hydration, cooking and water-linked food pathways

The same glass of water can involve all three viewpoints. The framework assigns each variable to the question it answers instead of creating another pillar.

CROSS-CUTTING ENVIRONMENTAL LINKS

The Water History Begins Before Intake

Water may come from rain, rivers, reservoirs, groundwater or managed supplies. Its recognised characteristics can be influenced by geology, land use, season, treatment, distribution and storage. These conditions must be documented because they can change water quality and confound a comparison. [2]

SOURCE AND EARTH Geology, minerals, land use and season	TREATMENT AND DISTRIBUTION Filtration, disinfection, pipes and transfer	STORAGE AND CONTAINER Tank, bottle, material, cleaning and time	SURROUNDINGS AND USE Heat, light, equipment, handling and place
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Environmental pathway Record the source-to-use history before interpreting any additional observation.

Established Attention Comes First

Applicable microbiological, chemical, physical and radiological requirements govern water safety. Accredited testing, necessary treatment and disinfection, hygienic storage and responsible handling must continue regardless of an Energy Hygiene reading. [2]

The Additional Research Question

Within the Foundation framework, researchers may ask whether selected, defined exposure conditions are followed by repeatable operator-mediated classifications after conventional differences are controlled. The exposure, duration, container, temperature, handling and assessment time should be recorded in advance.

Such a record is an investigational observation. It is not a measured physical emission from water, an environmental hazard standard or a water-safety certificate. When the conditioned water later becomes a daily input, the wider WEH question returns to its primary home in Lifestyle Energy Hygiene.

CROSS-CUTTING PERSONAL LINK

When the Question Reaches the Individual

A Personal Energy Hygiene connection begins when a study records a proposed response in an individual before and after a defined water exposure or intake. This is an outcome pathway within research; it does not move Water Energy Hygiene out of Pillar Three.

Foundation Observation

Aura Research Foundation reports that intake of selected water conditions was followed by short-term differences in its operator-mediated measure of human AURA or adaptive-field response. Some selected adaptive-frequency-conditioned samples were followed by a higher recorded response. [5]

These are preliminary Foundation observations. They are not established physiological measurements, clinical benefits, diagnoses, evidence of disease prevention or proof that the water caused the recorded change.

From Observation to Test

RECORD	CONTROL NEEDED
WATER	Use the same batch and record recognised water-quality measures.
COMPARISON	Code samples and include sham, untreated or defined comparison conditions.
INTAKE	Standardise volume, timing and relevant participant instructions.
ASSESSMENT	Use fixed before-and-after time points, blinding and separated roles.
OUTCOMES	Predefine recognised and investigational outcomes, ethics and analysis.

Alternative explanations include ordinary water differences, timing, individual variation, operator effects, expectation, measurement instability and chance. A study must permit positive, negative, mixed or null results.

What this link does not mean. It does not establish water memory or justify therapeutic advice. The Water Exposure Response and Retention Hypothesis is introduced later as a testable proposition, not accepted fact.

INDIRECT FOOD PATHWAYS

Water Reaches People Through Living Systems

Water supports crop production and is the living environment of cultured fish and other aquatic organisms. Recognised agronomy, water quality, animal health, food safety and nutrition determine how these systems are managed and evaluated. [3,4]

PLANT AND FOOD PATHWAY	AQUACULTURE FOOD PATHWAY
WATER → SOIL AND SEED → PLANT → FOOD → HUMAN	WATER → POND OR TANK → AQUATIC ORGANISM → FOOD → HUMAN

AHEH Plant and Food Pathway

AHEH is the upstream farm-to-nutrition component of Lifestyle Energy Hygiene. The Foundation reports that selected adaptive-frequency-conditioned irrigation water was followed by differences in measured plant adaptive response and, in related observations, germination, plant output and harvested-food profiles. These reports do not prove improved nutrition or a transfer of frequencies to people. [5]

Aquaculture Food Pathway

The Foundation also reports that selected adaptive-frequency support in an aquaculture setting was associated with a change, including reported improvement, in output. The separate contributions of water condition, species, stocking, feed, husbandry, environment and other variables have not been established. [5]

Reader takeaway. Water Energy Hygiene remains within Lifestyle Energy Hygiene because water reaches people through hydration and food. Environmental conditions and personal observations are cross-cutting links, not additional pillars. Conventional water, agricultural, aquaculture, food-safety and healthcare standards remain primary.

Chapter 4 explains how the Foundation's recurring water observations led to a distinct water-centred research question.

Selected Sources

[1] Institute of Medicine. Dietary Reference Intakes for Water, Potassium, Sodium, Chloride, and Sulfate. National Academies Press, 2005.

[2] World Health Organization. Guidelines for drinking-water quality: fourth edition incorporating the first and second addenda, 2022.

[3] Food and Agriculture Organization of the United Nations. The State of Food and Agriculture 2020: Overcoming water challenges in agriculture, 2020.

[4] Food and Agriculture Organization of the United Nations. The State of World Fisheries and Aquaculture 2024: Blue Transformation in action, 2024.

[5] Aura Research Foundation. Water Energy Hygiene: Public Awareness and Research Collaboration Brochure, 2026.

[6] Aura Research Foundation. Energy Hygiene: The Missing Link in Health, 2026.

PART ONE WATER LIFE AND FRAMEWORK

CHAPTER 4

How the Water Energy Hygiene Question Emerged

Reader question *What observations caused Aura Research Foundation to ask a separate water-centred research question?*

The Water Energy Hygiene question did not begin as a conclusion. Aura Research Foundation reports that it emerged when recurring assessments of selected water conditions were considered beside short-term human observations, AHEH irrigation observations and later aquaculture output observations. [1-3]

Seeing similar questions in more than one pathway suggested that water itself deserved a defined research programme. It did not show that the pathways shared one cause. The Foundation therefore moved from observation to a working hypothesis and proposed controlled testing.

DOCUMENT DATE	RECORDED DEVELOPMENT
AUGUST 2026	Scientific conceptual paper Recorded the reported water, short-term human and plant observations and stated the Water Exposure Response and Retention Hypothesis.
SEPTEMBER 2026	Public awareness concept note Placed the water question inside the three-pillar framework and separated established quality, exposure history and investigational response.
SEPTEMBER 2026	Four-page brochure Organised the direct, plant-food and aquaculture routes and set out comparison, blinding, measurement and replication needs.
SEPTEMBER 2026	A5 book master design Fixed WEH within Lifestyle Energy Hygiene and required observation, hypothesis and established science to remain visibly separate.

Documented concept-development timeline Dates identify project documents, not the date of every underlying observation.

Every reported pattern or outcome in this chapter is presented as a Foundation observation. The dates and methods of individual assessments must be verified against original logs before scientific reporting.

FOUNDATION OBSERVATION 1

Recurring Assessments of Selected Water Conditions

During the broader Energy Hygiene research programme, the Foundation assessed selected water samples after different exposure and handling conditions. Using its operator-mediated assessment procedure, it reports recurring differences in water-field or aura classifications between some selected conditions. [1,2]

SELECTED WATER	RECORDED CONDITION	ASSESSMENT
A defined source and batch	Exposure, treatment, container, time and handling	An operator-mediated comparison recorded by the Foundation

Foundation observation pathway A difference was recorded after selected water conditions were compared.

Why Recurrence Mattered

A single reading can arise from sample differences, handling, the operator, the instrument, the environment or chance. A recurring pattern can justify a better experiment, but recurrence within one programme is not independent confirmation.

The Water-Centred Question

Could exposure of same-batch water to a defined condition be followed by a reproducible assessment difference when source, chemistry, temperature, container, storage time, handling and assessment conditions are controlled? This question made water the subject of study rather than a background material.

What Was Not Established

The observations did not identify a physical emission from water, establish the Foundation classification as a physicochemical property or certify water as safe or unsafe. Conventional laboratory testing and necessary treatment remain primary. [5]

FOUNDATION OBSERVATION 2

Short Term Water to Human Observations

The question widened when the Foundation compared selected water conditions with short-term assessments in people. It reports that some selected adaptive-frequency-conditioned water samples showed a higher operator-mediated water-field response and that intake was followed by a higher recorded human AURA or adaptive-field response. [1,2]

WATER CONDITION	INTAKE	SHORT-TERM RESPONSE
A selected sample and recorded exposure history	Consumption within the Foundation observation	A before-and-after operator-mediated human assessment

Reported sequence Water condition came first; the short-term assessment followed intake.

EVIDENCE LEVEL	MEANING
FOUNDATION OBSERVATION	Selected adaptive-frequency-conditioned water was reported to show a higher operator-mediated water-field response; intake was followed by a higher short-term human AURA or adaptive-field response.
NOT ESTABLISHED	A physiological mechanism, a clinical benefit, disease prevention, improved hydration or a causal effect of the water.
REQUIRED TEST	Coded same-batch samples, defined comparison conditions, standardised intake, fixed time points, blinding, recognised measurements, ethics and replication.

Why the Human Link Mattered

The reported sequence connected water with the Personal Energy Hygiene research view of an individual's proposed adaptive condition. Water Energy Hygiene still remained in Lifestyle Energy Hygiene because drinking and hydration were the route of exposure.

Temporal order alone does not establish causation. The next scientific step is a protocol that controls the water, intake, participant context, operator, timing and analysis.

FOUNDATION OBSERVATIONS 3 AND 4

Parallel Plant and Aquaculture Observations

The water-centred question expanded beyond direct intake when related observations appeared in food-production pathways. The common subject was water, but the biological systems, confounding variables and required outcomes were different.

FOUNDATION OBSERVATION 3 AHEH IRRIGATION Conditioned water → plant assessment → crop outcomes	FOUNDATION OBSERVATION 4 AQUACULTURE OUTPUT Water setting → aquatic organism → production outcomes
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AHEH Irrigation Observation

The Foundation reports that irrigation with selected adaptive-frequency-conditioned water was followed by increased measured plant adaptive response and, in related AHEH work, differences in germination, plant output and harvested-food profiles. These observations do not establish superior crops, improved nutrition or a causal transfer from water to food or people. [2,3]

Aquaculture Output Observation

The Foundation later reported that selected adaptive-frequency support within an aquaculture setting was associated with a change, including reported improvement, in output. The roles of water, species, stocking, feed, husbandry, environment and other variables have not been separated. [3]

Controls Needed for Each Route

ROUTE	KEY CONTROLS	PREDEFINED OUTCOMES
PLANT AND FOOD	Identical seed lots, agronomy, plots and water quality	Germination, growth, yield, physiology, composition and safety
AQUACULTURE	Species, stocking, feed, husbandry and recognised water measures	Growth, survival, feed conversion, health and biomass

A shared question does not imply a shared result. Plant and aquaculture studies must be designed, analysed and replicated within their own disciplines.

WORKING HYPOTHESIS AND NEXT STEP

From Observation to WERRH

The observations led the Foundation to propose the Water Exposure Response and Retention Hypothesis, or WERRH. It asks whether a defined exposure may produce a reproducible change in water, whether any response persists after the exposure is removed, and whether resulting water is followed by repeatable biological outcomes. [1]

DEFINED EXPOSURE	WATER RESPONSE	POSSIBLE RETENTION	BIOLOGICAL TEST
A specified physical, environmental or investigational condition	A reproducible change sought with recognised and investigational measures	Does any response remain after the source is removed	Plant, aquatic or human outcomes compared under controls

Working hypothesis WERRH does not presume a mechanism and does not treat water memory as established science.

Alternative Explanations Must Remain Open

Possible explanations include ordinary physicochemical differences, contamination, container or storage effects, measurement instability, operator and expectation effects, natural biological variation, husbandry or agronomic differences, and chance. A valid programme must be able to find positive, negative, mixed or null results.

Independent Testing

The required progression is standardisation, coded comparisons, blinding, recognised measurements, predefined outcomes, replication across operators and sites, and independent review. Until then, the reported patterns remain Foundation observations and WERRH remains a working hypothesis.

Reader takeaway. The question emerged from reported patterns across water, people, plants and aquaculture. The responsible conclusion is that these patterns deserve controlled testing, not that the proposed effect has been proved.

Part Two now turns to established water science before the book examines the Foundation's operational concepts in detail.

Selected Sources

- [1] Aura Research Foundation. Water Energy Hygiene Scientific Conceptual Paper, August 2026.
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PART TWO

Established Water Science

This part gives readers the established scientific foundation needed for every later Water Energy Hygiene discussion. It begins with the molecule, then moves through recognised properties, safety, living systems, source conditions and handling.

Water responds to temperature, pressure, dissolved substances, surfaces and storage conditions in measurable ways. Those responses are central to water science. They must be characterised before an additional investigational effect is proposed.

The Foundation for Later Questions

LENS	PART TWO COVERAGE
MOLECULAR SCALE	Chapter 5 Water as a Dynamic Molecular System
SAFETY SCALE	Chapter 6 Water Quality and Safety
LIVING SYSTEMS	Chapters 7 to 9 Human physiology, plants and food, and aquaculture
SOURCE AND HANDLING	Chapters 10 and 11 Source, geology, minerals, treatment, distribution, storage and containers

Part Two follows water from a single molecule to the conditions of a real sample. Each step identifies variables that can explain an apparent difference and therefore belong in a controlled comparison.

How to Read Part Two

Established science. Statements in this part describe recognised molecular, physicochemical and biological knowledge supported by standard measurements.

Investigational boundary. Established water science provides context. It does not validate the Foundation's operator-mediated classifications or its proposed 400 to 752 Hz interval.

Safety remains primary. No investigational assessment can replace microbiological, chemical, mineral, radiological or toxicological evaluation for the intended use.

PART TWO ESTABLISHED WATER SCIENCE

CHAPTER 5

Water as a Dynamic Molecular System

Reader question *What can established science say about water's structure and response to its surroundings?*

A water molecule is small, but liquid water is a collective system. The behaviour of a glass or stored sample arises from vast numbers of molecules moving and interacting, together with dissolved substances, interfaces and environmental conditions.

This distinction matters. A molecular fact can explain why water has unusual measurable properties. It cannot, by itself, prove that a sample stores a persistent frequency, carries an adaptive classification or produces a biological outcome.

The Water Molecule

MOLECULAR SKETCH	WHAT THE SKETCH SHOWS
 Bent geometry about 104.5 degrees	Composition Two hydrogen atoms are covalently bonded to one oxygen atom. Polarity The oxygen end is partly negative and the hydrogen ends are partly positive. Shape The molecule is bent, so its charge is distributed unevenly. Interaction Opposite partial charges help neighbouring molecules form hydrogen bonds.

Water is H₂O: two hydrogen atoms joined to one oxygen atom by covalent bonds. The molecule is neutral overall, yet its electrons are shared unevenly. This gives the oxygen end a partial negative charge and the hydrogen ends partial positive charges. The molecule is therefore polar. [1]

Polarity allows a hydrogen end of one molecule to attract the oxygen end of a neighbour. This intermolecular attraction is called a hydrogen bond. It is weaker than the covalent O-H bonds within each molecule, but many such interactions together strongly influence the liquid.

MOLECULAR DYNAMICS

A Network That Never Stands Still

In ordinary liquid water, molecules translate, rotate and vibrate. Neighbours change, hydrogen bonds bend and exchange, and local arrangements fluctuate. The liquid is organised, but it is not a fixed lattice like a crystal.

A DYNAMIC HYDROGEN BOND NETWORK				
H ₂ O	...	H ₂ O	...	H ₂ O
Hydrogen bonds form, bend and break as molecules translate and rotate. The dotted links represent temporary intermolecular attraction, not covalent bonds.				

MOLECULE	LOCAL NETWORK	INTERFACE OR DROPLET	STORED SAMPLE
Bent and polar H ₂ O	Fluctuating neighbours and hydrogen bonds	Surface orientation and a larger surface role	Bulk water plus solutes, gases, container, temperature and time

Figure 5 Water as a dynamic molecular system

Local Structure and Constant Rearrangement

At any instant, a molecule may participate in a local hydrogen-bonded arrangement. Measurements and simulations describe these changing neighbourhoods statistically. Terms such as network, shell or local structure do not mean that one permanent cluster fills the sample. [5]

Time Scale Matters

Ultrafast spectroscopy shows that vibrational correlations and energy can redistribute on femtosecond time scales, while molecular reorientation and hydrogen-bond exchange continue across longer ultrafast intervals. Cowan and colleagues measured rapid loss of a selected vibrational correlation; their result should not be treated as one universal lifetime for every water property. [4]

A response during an exposure and retention after that exposure are different questions. Demonstrating the first does not establish the second. A retention claim requires a defined property, a validated instrument, controls and a time-course measurement after the exposure has ended.

EMERGENT PROPERTIES

How Molecular Interactions Become Familiar Properties

One molecule does not have surface tension, viscosity or a boiling point. These are bulk properties that emerge from large populations of molecules and depend on the conditions under which they are measured. [1-3]

COHESION AND SURFACE TENSION At a surface, molecular attractions are not balanced in every direction. The liquid therefore resists an increase in surface area. Surface tension changes with temperature.	HEAT CAPACITY AND EVAPORATION Water can absorb substantial heat before its temperature rises greatly. Evaporation removes energetic molecules and supports cooling.
DENSITY AND ICE The organised hydrogen-bonded structure of ordinary ice occupies more volume than the liquid. Ice is therefore less dense and can float.	SOLVENT AND ELECTRICAL BEHAVIOUR Polarity and dielectric response help water surround ions and polar molecules. Dissolved substances can change conductivity, pH and other measured properties.

Properties Belong to Defined Conditions

Temperature and pressure change density, viscosity, vapour pressure, heat capacity, sound speed and phase behaviour. IAPWS formulations therefore calculate thermodynamic properties from specified state variables rather than assigning one permanent set of values to all water. [2]

Surface tension also changes along the liquid-vapour equilibrium curve. Its measured value is meaningful only when temperature, purity and the interface are defined. [3]

Real Water Is a Sample

Outside a highly controlled laboratory, water contains dissolved minerals, salts and gases and may also contain organic matter or microorganisms. Treatment, pipes, tanks and containers can alter that composition. Chapter 6 examines the recognised measures that determine fitness and safety for an intended use.

The phrase water changed is scientifically incomplete. A useful statement identifies what changed, by how much, under which conditions, for how long and with what uncertainty.

PHYSICAL CONTEXT

The Same Molecule in Different Settings

Bulk water, a free surface, a small droplet, nanometre-confined water and a stored sample are not interchangeable experimental settings. The molecule remains H₂O, but its local environment and the relative importance of interfaces can differ.

CONTEXT	ESTABLISHED PHYSICAL POINT	RECORD FOR COMPARISON
BULK WATER	Most molecules are surrounded by other water molecules. Temperature, pressure and composition govern the measured bulk properties.	Temperature, pressure, source and composition
SURFACE OR INTERFACE	The hydrogen-bond network ends or meets another material. Molecular orientation and local response can differ from the bulk.	Surface material, area, charge and cleanliness
DROPLET	A small volume has more surface area relative to its volume, so evaporation and interfacial effects can become more important.	Droplet size, humidity, airflow and time
CONFINED WATER	Nanometre-scale gaps can restrict orientation and produce properties unlike ordinary bulk water. This is a special physical context.	Gap size, wall material and measurement direction
STORED SAMPLE	A bottle or tank includes bulk water, headspace, dissolved gases and contact with a container. Light, heat and elapsed time may matter.	Vessel, volume, headspace, closure, light and time

Scale Changes the Question

Experiments have found a strongly reduced out-of-plane dielectric response in water confined between atomically flat walls only a few molecules apart. This result is important for nanoscale interfaces. It does not establish that an ordinary bottle of water has the same property. [6]

Requirements for a Fair Sample Comparison

Comparison samples should begin from the same source and batch whenever possible. The record should include temperature, pressure where relevant, treatment, composition, vessel material, fill volume, headspace, closure, mixing, light, elapsed time and measurement sequence.

These controls do not dismiss an additional research question. They prevent ordinary molecular and sample differences from being mistaken for the effect under investigation.

INTERPRETATION BOUNDARY

What a Measured Change Means

A valid measurement supports a specific statement about a defined property under defined conditions. It does not automatically identify the cause, show persistence or establish a benefit.

OBSERVATION	JUSTIFIED INTERPRETATION	NOT ESTABLISHED BY THAT RESULT
Density, viscosity or surface tension differs	A recognised property differed under the stated conditions	A lasting imprint, health effect or adaptive classification
Conductivity or pH differs	Composition, temperature or gas exchange may differ and should be investigated	The cause of the difference or its biological significance
A spectrum changes during exposure	The sample interacted with the applied measurement or exposure under defined conditions	Persistence after exposure or transfer to a living system
An outcome follows a water exposure	A sequence has been observed and can be tested	Causation without controls, blinding, replication and alternative explanations

Frequency Needs a Physical Definition

Hertz means cycles per second. A frequency number alone does not identify what is oscillating. A reproducible study must define whether the exposure is acoustic, mechanical, electrical or electromagnetic and must report amplitude, waveform, coupling method, distance, duration, sample geometry and the instrument used to measure a response.

The Foundation's proposed 400 to 752 Hz interval is an investigational operational classification. It is not an established molecular vibration band, a measured emission from water, a biological safety limit or proof of adaptive or nonadaptive effects. Recognised molecular rotational and vibrational spectra of water occur mainly in microwave, terahertz and infrared regions, many orders of magnitude above hundreds of hertz.

Reader takeaway. Water is dynamic and responsive, but recognised molecular behaviour does not prove persistent frequency information or validate an operator-mediated classification. Chapter 6 turns to the recognised measures of water quality and safety.

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PART TWO ESTABLISHED WATER SCIENCE

CHAPTER 6

Water Quality and Safety

Reader question *Which recognised measures determine whether water is suitable for its intended use?*

Water can look clear, smell acceptable and still contain microorganisms or colourless chemicals. The reverse is also possible: an unpleasant taste or odour may signal an acceptability problem without, by itself, identifying a health hazard. Safety therefore cannot be judged by appearance, taste or one instrument reading.

A recognised assessment begins with intended use, applicable law and the people or living systems that may be exposed. It then combines suitable sampling, validated methods, competent interpretation and management of risks from source to use. WHO guidance supports national standards and water-safety planning; the legally applicable requirements remain those of the relevant jurisdiction. [1-3]

Three Foundations

INTENDED USE	COMPLETE EVIDENCE	SOURCE-TO-USE CONTROL
Begin with the use: drinking, irrigation, aquaculture or food operations. The relevant hazards and limits are not identical.	Use the required microbiological, chemical, physical, mineral, radiological and toxicological evidence—not one convenient reading.	Protect the source, apply suitable treatment, manage distribution and storage, monitor controls, verify performance and review incidents.

The Safety Boundary

Conventional safety comes first. A Water Energy Hygiene reading—including an operator-mediated adaptive or nonadaptive classification—cannot certify potability, identify contamination or replace required treatment, accredited testing or public-health advice.

Numerical limits are deliberately not reproduced here. They vary by intended use and jurisdiction and can change. Use current applicable requirements and competent advice.

RECOGNISED SAFETY DOMAINS

Quality Has More Than One Dimension

No single measurement describes the whole water sample. A defensible conclusion brings several domains together and relates them to the intended use, the exposure route and the applicable standard.

WATER QUALITY IS A MULTI-DOMAIN JUDGEMENT	
MICROBIOLOGICAL Pathogens and indicators associated with faecal contamination, treatment failure or regrowth.	CHEMICAL AND TOXICOLOGICAL Naturally occurring and human-made substances assessed for exposure and health significance.
MINERAL AND IONIC Dissolved salts, hardness-forming ions and specific constituents relevant to use and acceptability.	PHYSICAL AND OPERATIONAL Temperature, turbidity, colour, taste, odour and process variables used to understand and control the system.
RADIOLOGICAL Screening and, where indicated, radionuclide-specific assessment under the applicable framework.	FIT FOR INTENDED USE The combined judgement: results, method quality, exposure route, vulnerable users, standards and local conditions considered together.

Figure 6 Recognised dimensions of water quality and safety

Read the Domains Together

A sample may meet one criterion and fail another. For example, an acceptable pH does not exclude faecal contamination, arsenic or a radiological concern. A low turbidity result does not prove that every pathogen is absent. Conversely, a mineral concentration that is suitable for one use may create a taste, crop or process problem in another.

Mineral is not automatically beneficial or harmful. Identity, concentration, chemical form, total exposure, affected population and intended use determine significance.

This multi-domain view prevents a convenient number—whether TDS, pH, ORP, a frequency label or any other reading—from being treated as a universal water-quality score.

MEASUREMENT CONTEXT

Common Variables—Useful but Incomplete

The variables below are widely used to describe a water sample or control a process. Each answers a limited question. Results depend on method, calibration, temperature, sampling point and intended use.

Table 3 Recognised water-quality variables and purposes

VARIABLE	COMMON UNIT	WHAT IT HELPS ASSESS	WHAT IT CANNOT ESTABLISH ALONE
pH	No unit	Acid-base condition; treatment, corrosion and biological context	Overall safety or the identity of a contaminant
Conductivity	µS/cm	Electrical conductance; a temperature-dependent proxy for ionic content	Which ions are present or whether they are harmful
Total dissolved solids (TDS)	mg/L	Approximate dissolved-solids or mineral load; acceptability and process context	Individual chemicals, pathogens or complete suitability
Oxidation-reduction potential (ORP)	mV	Oxidising or reducing condition in a defined process and measurement system	A universal good/bad score or a complete disinfection result
Dissolved oxygen (DO)	mg/L or % saturation	Oxygen available in water; vital process, ecological and aquaculture context	Drinking-water safety or all aquatic health conditions
Turbidity	NTU	Suspended-particle and clarity context; treatment performance and disinfection control	A direct count of pathogens or the chemical cause
Salinity	g/L, ppt or PSU, by method	Salt content; important for irrigation, aquaculture and source comparison	Suitability without crop, species, soil and method context

Units shown are common reporting units, not universal instructions. Laboratories must use the specified method and report temperature correction, detection or quantification limits and measurement uncertainty where relevant.

One Number Does Not Make a Certificate

Conductivity and TDS can signal a difference in dissolved ionic content, but they do not identify the ions. ORP can assist process interpretation, but it is not a universal measure of healthy or unhealthy water. Dissolved oxygen is crucial in aquaculture, yet it does not establish drinking-water safety. Turbidity can warn of particles and treatment challenges, but it is not a direct pathogen count.

The correct next question is not Is this number good? It is: What does this result mean for this source, method, use and standard?

HAZARDS AND EVIDENCE

What Clear Water May Conceal

Microorganisms and dissolved contaminants cannot usually be ruled out by unaided senses. Testing must therefore be chosen from a reasoned hazard assessment, not from a fixed short list applied to every source. Source geology, land use, sanitation, industry, agriculture, treatment, plumbing materials and previous incidents all shape the test plan. [1-3]

DOMAIN	WHAT MAY BE SOUGHT	WHY CONTEXT MATTERS
Microbiological	Bacteria, viruses and protozoa; faecal indicators such as E. coli	Indicator tests support risk assessment, but no one indicator represents every pathogen.
Chemical and toxicological	Examples may include arsenic, fluoride, nitrate, lead, pesticides, cyanotoxins or treatment by-products	Select analytes from source history, land use, treatment, materials, incidents and legal requirements.
Radiological	Gross screening and radionuclide-specific tests where the source or screening result indicates a need	Use the applicable national approach and qualified specialist interpretation.

A Result Begins Before the Laboratory

1 PLAN Use, hazards, tests and method	2 SAMPLE Correct point, container and technique	3 PRESERVE Temperature, holding time and transport	4 ANALYSE Validated method, controls and scope	5 INTERPRET Limits, uncertainty and context
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Wrong sampling points, contaminated containers, delayed transport or unsuitable preservation can make a technically precise analysis answer the wrong question. Records should protect sample identity and trace the sample from collection to result.

What Accredited Testing Adds

ISO/IEC 17025 provides a framework for competent, impartial and consistent laboratory operation. Accreditation should cover the relevant test or method—not merely the laboratory name. Useful reports identify the sample, method, unit, result, reporting limit where applicable and any qualification needed for interpretation. [4]

A non-detect does not always mean zero; it means the analyte was not detected under the stated method and reporting limit. A value within specification is meaningful only for the tested sample, date, location and requirements applied.

FIT FOR PURPOSE

The Intended Use Changes the Assessment

Safe for one purpose does not automatically mean suitable for another. Direct intake, plant-food, aquaculture-food and food-operation routes involve different organisms, contact patterns and management systems. The assessment must follow the pathway. [5-7]

PATHWAY	INTENDED USE	MEASURES THAT MAY RECEIVE ATTENTION	CONTEXT NEEDED
DIRECT INTAKE	Drinking and household consumption	Microbiological, chemical, radiological and acceptability parameters under applicable drinking-water requirements	Source, treatment, distribution, storage and susceptible users
PLANT-FOOD ROUTE	Irrigation and produce-related use	Salinity and sodicity, specific-ion toxicity, nutrients, contaminants and microbial risk appropriate to crop and practice	Crop sensitivity, soil, drainage, irrigation method and whether the edible part contacts the water
AQUACULTURE-FOOD ROUTE	Ponds, tanks and integrated systems	Temperature, dissolved oxygen, pH, salinity, nitrogen compounds and contaminants relevant to species and system	Species, life stage, stocking density, feed, aeration, season and harvest-food safety controls
FOOD OPERATIONS	Preparation, washing, ice, steam and food-contact use	Water quality suitable for the specific operation, hygienic controls and the applicable food law or code	Whether water directly contacts food, people or equipment and whether it becomes an ingredient

Indirect Does Not Mean Unimportant

In the plant-food route, irrigation water interacts with soil, roots, climate and farm practice before food reaches a person. In aquaculture, water is the animals' living medium; oxygen, temperature, pH, salinity and waste products can influence welfare, growth and production. Food safety at harvest remains a separate question requiring appropriate contaminant, hygiene and processing controls.

A comparison of aquaculture output must therefore record species, life stage, feed, stocking density, aeration, temperature, dissolved oxygen, pH, nitrogen compounds, disease events, water exchange and harvest measures. Without those controls, a yield difference cannot be assigned to an investigational water exposure.

The route map identifies what deserves attention; it does not imply that water carries a proven adaptive or nonadaptive influence through food. That proposition remains testable and investigational.

SOURCE-TO-USE PROTECTION

Manage Risk Before the Final Test

End-point testing is important, but a sample cannot continuously represent an entire water system. [1,2] Water safety planning therefore manages risk proactively from source and catchment through treatment, distribution, storage and use.

1 UNDERSTAND Source, system and users	2 ASSESS Hazards, events and risks	3 CONTROL Barriers and operating limits	4 VERIFY Testing, audit and surveillance	5 IMPROVE Review, correct and document
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When a Result Is Outside Specification

Protect first. Follow the applicable authority's advice and prevent inappropriate exposure. **Then investigate.** Confirm sampling and analysis, identify the source or control failure, correct it, retest where required and document the decision.

The Non-Negotiable WEH Boundary

AN INVESTIGATIONAL WEH READING CANNOT	THE APPROPRIATE ROUTE IS
Declare unsafe water safe	Use applicable standards and competent laboratory evidence.
Override required treatment or disinfection	Maintain necessary controls unless authorised public-health guidance changes them.
Identify a pathogen, chemical or radionuclide	Use validated, analyte-specific sampling and testing.
Diagnose a health effect or prove benefit	Use appropriate clinical or biological research under ethical oversight.

Reader takeaway. Water quality is a fit-for-purpose, multi-domain judgement supported by competent testing and source-to-use risk control. It remains the foundation beneath every later Water Energy Hygiene question. Chapter 7 turns to water in human physiology and homeostasis.

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PART TWO ESTABLISHED WATER SCIENCE

CHAPTER 7

Water in Human Physiology and Hydration

Reader question *What does water already do in the human body?*

Water is the medium in which most body chemistry occurs. It is present inside cells, around cells and within the circulation. It helps maintain cell volume, carries dissolved substances, distributes heat and supports the controlled removal of wastes. These functions depend on water and electrolytes being kept within suitable physiological ranges. [1,2]

Hydration does not mean filling one fixed reservoir or drinking the largest possible volume. It describes a regulated relationship between water intake, solute balance, distribution among body compartments and ongoing losses. The body continually adjusts this relationship through thirst, hormones, the kidneys, circulation and behaviour.

Water Is Distributed Throughout the Body

Total body water is a large but variable share of body mass. Lean tissue contains more water than adipose tissue, so the proportion differs with age, body composition, sex-related physiology and health. A single percentage should not be treated as a personal hydration target.

INTAKE Drinks and water in food	DISTRIBUTION Plasma and interstitial fluid	CELL EXCHANGE Water crosses membranes as conditions require	REGULATED LOSS Urine, sweat, breath and faeces
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A Balance Rather Than a Fixed Amount

Daily intake comes from drinking water, other beverages and moisture in food, with a smaller contribution from metabolism. Loss occurs mainly through urine, with additional losses through skin and sweat, breathing and faeces. Hydration reflects how these inputs and outputs are regulated over time. [3-5]

PHYSIOLOGICAL OVERVIEW

Water Connects Intake Cells and Elimination

Water does not act at one isolated point. It enters through the gastrointestinal tract, joins extracellular fluid, exchanges with cells and leaves through regulated pathways. The same system supports several physiological functions at once.

WATER MOVES THROUGH A REGULATED BODY SYSTEM			
INPUT Water and other beverages Water in food Small metabolic contribution	EXTRACELLULAR FLUID Blood plasma Interstitial fluid Smaller specialised spaces	INTRACELLULAR FLUID Water within cells Dynamic exchange across membranes	LOSS Urine Sweat and skin Breath and faeces
START Safe water and food	DISTRIBUTE Circulation carries water and solutes	USE AND EXCHANGE Cells regulate volume and chemical conditions	ADJUST Kidneys adjust water excretion

CELL CHEMISTRY Solvent, reaction medium and volume support	CIRCULATION Transport of nutrients, hormones, electrolytes and wastes	TEMPERATURE CONTROL Heat distribution and evaporative cooling
DIGESTION AND ABSORPTION Fluid environment for gastrointestinal processes	PROTECTION AND LUBRICATION Cushioning and low-friction movement in specialised fluids	WASTE REMOVAL Urinary excretion and water in normal bowel function

Figure 7 Water in human physiology

Water Supports Function Through Context

The value of water to physiology does not come from water alone. Electrolytes, proteins, cell membranes, blood flow, hormones, kidney function and temperature all shape how it is distributed and used. Drinking water therefore enters an already regulated biological system rather than acting as a free-standing treatment.

A short-term change observed after drinking water may reflect the volume consumed, temperature, posture, recent food or fluid intake, expectation, time of day or normal measurement variation. Those factors must be considered before proposing an additional effect.

BODY FLUID COMPARTMENTS

Inside Cells and Outside Cells

Most body water is inside cells. The remainder is extracellular, chiefly the interstitial fluid that surrounds cells and the plasma in blood. Smaller specialised fluids include cerebrospinal, synovial and gastrointestinal fluids. These are connected by exchange, but their composition is not identical. [1,2]

FEATURE	INTRACELLULAR FLUID	EXTRACELLULAR FLUID
WHERE IT IS	Within cell membranes; the largest body-fluid compartment in a typical healthy adult	Outside cells; mainly interstitial fluid around cells and plasma within blood vessels
TYPICAL ION PATTERN	Relatively rich in potassium and phosphate-containing solutes	Relatively rich in sodium and chloride; plasma also contains proteins
MAIN ROLE IN EXCHANGE	Supports cell volume, enzyme activity and intracellular reactions	Links organs and cells through circulation and local tissue exchange
CONTROL PRINCIPLE	Water crosses membranes in response to osmotic gradients; cells regulate solutes and volume	Kidneys, thirst, hormones and circulation regulate volume and concentration

Electrolytes Guide Water Movement

Osmolality describes the concentration of particles that influence water movement. Cell membranes allow water to move readily, while transport proteins and pumps maintain different solute patterns inside and outside cells. Sodium is prominent in extracellular fluid and potassium within cells. Large disturbances in water or electrolytes can therefore alter cell volume and function.

Circulation Transport and Metabolism

Plasma provides the fluid phase of blood. It carries electrolytes, nutrients, hormones and metabolic products between organs and tissues. Within cells, water acts as a solvent and participates in many biochemical reactions. It also supports digestion and the absorption and movement of nutrients from the intestine.

Waste Removal Is Regulated

The kidneys filter plasma, recover needed water and solutes, and excrete urea and other dissolved wastes in urine. Drinking excessive water does not create a general detoxification process; the kidneys regulate excretion within physiological limits. Water also supports normal bowel function, while sweat and breath contribute to loss rather than serving as complete waste-clearance pathways.

HYDRATION REGULATION

The Body Detects and Corrects Change

Specialised sensors respond when plasma becomes more concentrated or circulating volume falls. The brain can increase thirst and release vasopressin, also called antidiuretic hormone. Vasopressin helps the kidneys conserve water by producing a smaller volume of more concentrated urine. When water is abundant, vasopressin falls and the kidneys can excrete more dilute urine. [1,2]

CHANGE	SENSE	RESPOND	CORRECT	REVIEW
Water loss raises concentration or reduces circulating volume	Brain and circulation detect osmotic and volume signals	Thirst increases and vasopressin reduces renal water loss	Intake rises and the kidneys adjust urine volume and concentration	Feedback eases as balance is restored

The Kidneys Regulate Water and Solutes Together

Water balance cannot be separated completely from sodium and circulation. When volume is threatened, neural and hormonal systems also promote sodium conservation and support blood pressure. Kidney function sets the practical limit on how rapidly water and electrolytes can be corrected or excreted.

Thermoregulation Changes Water Loss

Blood distributes heat from active tissues toward the skin. Sweating places water on the skin surface, and evaporation removes heat. In hot or humid conditions, during exercise or while wearing protective clothing, sweat losses may rise substantially. Humidity reduces evaporative efficiency even when sweating continues.

More Is Not Always Better

Insufficient replacement can lead to dehydration. Excessive intake over a short period can also be harmful because it may dilute blood sodium, especially when kidney excretion is exceeded or when illness, medicines or prolonged exercise alter regulation. Hydration practice should match losses and individual conditions rather than pursue the highest volume.

Hydration Status Needs Context

No single sign gives a complete hydration diagnosis. Thirst, urine colour and urine volume can be useful everyday clues, but food, medicines and illness may alter them. Clinical or research assessment may use body-mass change, intake and output, urine concentration, blood sodium or osmolality and examination, selected for the question and interpreted together.

INDIVIDUAL HYDRATION

Water Needs Vary

There is no universal eight-glass prescription. Reference values describe total water from beverages and food for defined populations and ordinary conditions. They are planning guides, not a personal dose. Needs change with the person, environment, activity, diet and health. [3-5]

FACTOR	EXAMPLES	WHY IT MATTERS
PERSON	Age, body size and composition, pregnancy or breastfeeding	Baseline total-water needs differ across life stages and individuals.
ENVIRONMENT	Heat, humidity, altitude and access to cooling	Sweat and respiratory losses can change.
ACTIVITY	Duration, intensity, clothing and work or exercise conditions	Sweat loss and electrolyte replacement needs can rise.
DIET AND HEALTH	Food moisture, salt and protein intake, fever, vomiting, diarrhoea, medicines and disease	Intake, losses and the body's ability to regulate water may change.

Use General Advice Responsibly

For most healthy adults, safe drinking water taken regularly and adjusted for heat, activity and thirst contributes to normal hydration. Significant vomiting, diarrhoea, fever or heavy sweating can involve electrolyte as well as water loss and may require specific rehydration guidance. People who have been told to limit or modify fluid intake should follow their clinician's plan rather than general advice.

The Boundary for Later WEH Research

An AURA or operator-mediated reading taken after water intake is not a recognised measurement of hydration, electrolyte balance or clinical benefit. The Foundation's proposed 400 to 752 Hz interval is investigational; it is not a physiological hydration range or medical target.

A controlled direct-intake study should standardise water source, safety, volume, temperature and timing and record recent food, fluid, exercise and relevant health conditions. Randomisation, blinding, comparators, repeated measurements and physiological outcomes appropriate to the question are needed before a short-term assessment response can be interpreted.

Reader takeaway. Water supports cell chemistry, circulation, temperature control and waste removal within a regulated water-electrolyte system. Hydration needs vary, and medical instructions take priority. Chapter 8 follows water into soil, plants and harvested food.

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PART TWO ESTABLISHED WATER SCIENCE

CHAPTER 8

Water in Plants Soil Agriculture and Food

Reader question *How does water move through soil and plants into harvested food?*

Water links a farm's source, soil, crop and harvest. It carries dissolved substances to the root zone, supports cell expansion and metabolism, and helps move mineral nutrients through the plant. Yet it never acts alone: soil structure, drainage, air, light, temperature, crop genetics, microorganisms and management all shape the outcome. [1-3]

SOURCE	FIELD	SOIL	PLANT	FOOD
Rain, surface water, groundwater or managed supply	Treatment, storage and irrigation practice	Infiltration, storage, drainage and dissolved solutes	Root uptake, xylem transport and transpiration	Harvested roots, leaves, fruits, grains or seeds

Soil Is a Living Water Reservoir

After rain or irrigation, water may run off, evaporate, infiltrate, remain in soil pores or drain below the root zone. Large pores favour rapid movement and aeration; smaller pores retain water more strongly. Roots can use only the portion that remains accessible at a sufficiently favourable water potential. Texture, structure, organic matter, compaction and rooting depth therefore matter together.

Water Carries More Than Water

The soil solution contains mineral ions, dissolved organic compounds and gases. Their concentrations change as roots take up water and nutrients, water evaporates, fertilisers dissolve, salts accumulate or water drains. Irrigation-water analysis must therefore be interpreted with soil and crop information rather than treated as a stand-alone score.

THE MOVEMENT PATHWAY

From the Root Zone to Harvest

Water moves through a connected soil–plant–atmosphere system. Differences in water potential provide the direction: from wetter soil toward roots, through xylem and ultimately toward the drier atmosphere. Plant membranes, aquaporins, root anatomy and stomata regulate parts of this route. [1,2]

THE SOIL–PLANT–ATMOSPHERE CONTINUUM		
1 IRRIGATION OR RAIN Water reaches the field; some may evaporate, run off or be intercepted.	2 SOIL AND ROOT ZONE Water infiltrates pores, is stored against gravity and carries dissolved solutes.	3 ROOT ENTRY Water moves toward and across roots along water-potential gradients.
4 XYLEM TRANSPORT A continuous water column supplies stems, leaves and growing tissues.	5 LEAF EXCHANGE Evaporation through stomata drives much of the flow and cools leaves.	6 GROWTH AND HARVEST Water supports metabolism, cell expansion and transport into edible organs.
<i>The route is dynamic: water may return to the atmosphere, drain below roots, remain in plant tissue or be present in harvested food.</i>		

Figure 8 Water movement through soil plants and food

Root Uptake Is Selective

Water travels through cell walls and living cells toward the root xylem. The endodermis restricts an uncontrolled bypass into the vascular system, while membrane transport helps regulate ions. Roots do not simply absorb every dissolved substance in the same proportion as the surrounding water.

Most Flow Ends as Transpiration

Evaporation from moist leaf surfaces and diffusion through stomata create much of the tension that draws xylem water upward. A large share of absorbed water returns to the atmosphere; a smaller share remains in tissues or participates in metabolism. The proportions vary with crop, weather, growth stage and management.

Water is a reactant in photosynthesis, but most plant dry matter is built from carbon dioxide in the air. Water and minerals are indispensable without being the plant's main source of carbon mass.

PLANT PHYSIOLOGY

Water Supports Several Processes at Once

A crop response cannot be explained by one observation alone. Germination, leaf water status, gas exchange, nutrient uptake, biomass and yield describe different stages of plant performance and may not change in the same direction.

PROCESS	ESTABLISHED ROLE OF WATER	USEFUL OUTCOMES
GERMINATION	Imbibition rehydrates the seed and enables metabolism and radicle emergence.	Germination percentage, time and seedling vigour
TURGOR AND EXPANSION	Water pressure within cells supports form, leaf expansion and growth.	Leaf water status, wilting, area and growth rate
NUTRIENT ACQUISITION	Mineral ions in soil solution reach roots by mass flow and diffusion, then cross selective membranes.	Soil solution, tissue minerals and deficiency or toxicity signs
PHOTOSYNTHESIS	Water supplies electrons in the light reactions; stomata balance carbon-dioxide entry with water loss.	Gas exchange, chlorophyll fluorescence and carbon gain
TRANSPIRATION	Evaporation from leaves helps drive xylem flow and affects leaf temperature.	Stomatal conductance, transpiration and canopy temperature
GROWTH AND YIELD	Water availability influences biomass allocation, flowering and filling of edible organs.	Dry biomass, harvest index, yield and crop quality

Too Little and Too Much Can Both Harm

Water deficit can reduce turgor, close stomata, limit carbon dioxide uptake and redirect growth. Prolonged stress can impair flowering, seed or fruit filling and yield. Waterlogging creates a different problem: air is displaced from pores, root respiration is restricted and root disease risks may rise. Recovery depends on severity, duration, crop and developmental stage.

Measure the Plant Not an Assumption

Visible greenness or height may be useful but incomplete. Strong studies use prespecified, objective measures and include dry biomass and harvest yield where relevant. Water use should be recorded so that a larger plant is not mistaken automatically for greater water-use efficiency.

IRRIGATION WATER QUALITY

Suitability Depends on Use and Context

There is no universal label of ‘good irrigation water’ based on one reading. Suitability depends on the crop and rootstock, soil, climate, irrigation method, duration of use, drainage, leaching opportunity and management capacity. FAO guidance treats results as indicators of potential restrictions, not verdicts detached from field conditions. [3]

WHAT TO CHECK	WHY IT MATTERS	INTERPRET WITH
SALINITY	Dissolved salts lower soil-water potential, so roots must work against a larger gradient.	Electrical conductivity of water and root-zone soil; crop tolerance; drainage
SODICITY AND INFILTRATION	High sodium relative to calcium and magnesium can weaken soil structure and restrict infiltration.	Sodium adsorption ratio together with salinity; soil texture and infiltration rate
SPECIFIC IONS	Boron, chloride or sodium can injure sensitive crops at concentrations tolerated by others.	Ion analysis, crop and rootstock sensitivity, application method and symptoms
NUTRIENTS AND ALKALINITY	Nitrogen and other nutrients may contribute value or imbalance; bicarbonate and pH affect management.	Full analysis, fertilizer plan, soil testing and emitter scaling risk
BIOLOGICAL AND CHEMICAL HAZARDS	Pathogens and contaminants can affect workers, crops, soil, animals or consumers depending on exposure.	Source history, intended use, crop contact, treatment and applicable standards
PHYSICAL AND OPERATIONAL QUALITY	Sediment, algae and precipitates can block equipment and change distribution uniformity.	Turbidity or suspended solids, filtration, emitter inspection and uniformity

What Should Receive Attention

Start with source history and representative sampling. Test the parameters relevant to the source and intended crop. Interpret them alongside root-zone soil tests, drainage and crop response. Record treatment, blending, storage and application. Recheck when the source, season or management changes, and use local agricultural and food-safety requirements.

Electrical conductivity is not a complete quality test, pH does not reveal every contaminant, and clear water is not necessarily microbiologically safe. No investigational frequency reading should replace conventional analysis.

FROM CROP TO CONSUMER

Harvest Adds a Food-Safety Pathway

Irrigation water may contact edible tissue directly, reach it indirectly through soil, or influence the crop through root-zone conditions. Risk depends on the water source, hazard, application method, timing before harvest, edible portion and whether food will be cooked. Water used for washing or processing is a separate exposure that also requires fit-for-purpose control. [4,5]

WATER	FIELD	APPLICATION	HARVEST
Source, date, treatment, storage and conventional analysis	Site, soil, amendments, crop, seed or planting material	Method, volume, schedule, weather and crop-contact route	Lot, date, yield, quality, wash water and storage

Trace the Chain Before Interpreting It

A food sample is the result of many exposures. Traceability connects the water lot to field conditions, the crop and the harvested lot. It allows investigators to distinguish a water effect from differences in soil, nutrition, weather, handling, washing, storage or natural biological variation.

The Boundary for AFCIW Research

Adaptive-Frequency-Conditioned Irrigation Water (AFCIW), the proposed 400 to 752 Hz interval, and adaptive or non-adaptive classifications based on AURA or operator-mediated assessment remain investigational. Established plant physiology does not validate these classifications, and a change in plant growth would not by itself demonstrate that an effect is retained in food or transferred to a person who eats it.

MATCH	CONTROL	STABILISE	MEASURE
Water chemistry and microbiology, volume, temperature, seed lot, soil, nutrients and containers	Untreated and sham-exposed water; randomised replicate units; coded samples and blinded assessors	Light, air temperature, humidity, planting density, irrigation timing and pest management	Germination, physiology, biomass, yield, composition, food safety and prespecified statistics

Any plant-to-food-to-human proposition requires separate stages of evidence: a reproducible difference in conditioned water, a controlled plant response, a verified change in harvested food and an independently designed human study. Conventional water safety and food hygiene remain primary throughout.

Reader takeaway. Water links soil, plants and food through measurable physical, chemical and biological processes. Safe irrigation, field context and traceability come first; proposed frequency effects must be tested with controls and cannot be assumed to pass through food. Chapter 9 turns to aquaculture and aquatic food systems.

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PART TWO ESTABLISHED WATER SCIENCE

CHAPTER 9

Water in Aquaculture and Aquatic Food Systems

Reader question *Why does water quality directly shape aquaculture conditions and output?*

In aquaculture, water is not only an input. It is the animals' immediate environment for breathing, feeding, excretion, movement and temperature exchange. Fish, crustaceans and molluscs differ greatly, but every production system must keep its water conditions within ranges suited to the cultured species and life stage. [1,2]

SOURCE	SYSTEM	LIVING COMMUNITY	MANAGEMENT	OUTPUT
Fresh, brackish, marine or recirculated water	Pond, tank, raceway, cage or recirculating unit	Cultured animals, algae and microorganisms	Stocking, feed, aeration, exchange and health care	Survival, growth, biomass, harvest and food quality

A Pond or Tank Is a Living System

Cultured animals share water with microorganisms, algae, suspended particles and dissolved substances. Feed becomes animal growth only in part; the remainder contributes faeces, excreted nitrogen, dissolved nutrients and oxygen demand. Sunlight, rain, evaporation, soil, source water and surrounding land can also change the system.

The System Changes Through the Day

Temperature, dissolved oxygen, pH and algal activity may vary by hour and depth. A value measured once at the easiest sampling point can miss a stressful period elsewhere. Monitoring should therefore match the system, species, production intensity and time at which risk is greatest.

Water quality and husbandry form one feedback system: stocking and feeding change the water, and the changing water affects appetite, health, growth and survival.

THE PRODUCTION ENVIRONMENT

Water Conditions Connect Inputs With Output

Aquaculture performance emerges from linked conditions rather than a single water number. Management controls some inputs, the cultured animals and microorganisms alter the water, and production records reveal the combined outcome.

WATER CONDITIONS CONNECT MANAGEMENT WITH OUTPUT			
INPUTS AND CONTROLS	WATER CONDITIONS	ANIMAL RESPONSE	PRODUCTION OUTCOMES
Source water Species and stocking Feed Aeration and circulation Water exchange or filtration	Temperature Dissolved oxygen pH and alkalinity Salinity Ammonia and nitrite Microbial and algal conditions	Respiration Osmoregulation Appetite and feed use Stress and health Growth and reproduction	Survival Weight gain Feed conversion Standing biomass Harvest yield and quality
FEEDBACK Uneaten feed, faeces, excretion, algae and microbial activity alter water conditions; management must respond.			

Figure 9 Aquaculture water conditions and production outcomes

Variables Interact

Warm water generally holds less dissolved oxygen while many animals consume oxygen more rapidly as temperature rises within their active range. Photosynthesis can raise oxygen and pH in daylight; animal, plant and microbial respiration continue at night, so oxygen may fall before dawn in productive ponds. The pattern depends on biomass, weather, mixing and system design. [1,2]

Nitrogen Links Feed Water and Biofiltration

Protein metabolism and decomposition add ammonia. The proportion present as more toxic un-ionised ammonia rises with pH and temperature. Nitrifying microorganisms can convert ammonia to nitrite and then nitrate, but they require suitable oxygen, surface area and environmental conditions. Nitrite risk also varies by species and water chemistry.

A corrective action aimed at one variable may change another. Aeration, liming, water exchange, feeding changes or biofilter adjustment should be selected for the diagnosed problem and the production system—not applied as universal remedies.

WATER QUALITY MONITORING

Each Reading Needs Biological Context

Acceptable ranges are species-, life-stage- and system-specific. Thresholds also depend on exposure duration and interacting variables. A general reader should therefore resist copying one number from another farm or species as a universal target.

VARIABLE	WHY IT MATTERS	INTERPRET WITH
TEMPERATURE	Changes metabolism, appetite, oxygen demand and the amount of oxygen water can hold.	Species, life stage, depth, season and time of day
DISSOLVED OXYGEN	Supports respiration; low levels can suppress feeding and growth or cause mortality.	Critical times and depths, aeration, biomass and daily pattern
pH AND ALKALINITY	pH affects physiology and chemical toxicity; alkalinity helps buffer rapid pH change.	Daily cycle, source, algae, carbon dioxide and species tolerance
SALINITY	Sets the osmotic environment and determines which species and life stages are suited.	Species, acclimation, evaporation, rainfall and source variation
AMMONIA	Comes from animal excretion and decomposition; the un-ionised fraction is especially toxic.	Total ammonia nitrogen together with pH and temperature
NITRITE	An intermediate in nitrification that can interfere with oxygen transport in susceptible fish.	Species, chloride, biofilter or pond function and exposure duration
SOLIDS ALGAE AND MICROBES	Shape clarity, oxygen demand, gill exposure, off-flavour, disease risk and system loading.	Turbidity, bloom condition, solids removal and health observations

What Should Receive Attention

Map the water source and flow through the unit. Measure at representative locations and at biologically important times. Calibrate instruments, record units and methods, and use laboratory analysis where field meters are insufficient. Trend data alongside feed, biomass, weather, aeration, mortalities and animal behaviour.

Clear water is not automatically safe, and one normal reading does not rule out a rapid change. Emergency limits and actions should be set with qualified aquaculture and aquatic-animal-health professionals for the actual species and system.

HUSBANDRY AND OUTPUT

Production Is More Than Water Quality

Stocking density sets the living biomass and potential oxygen and waste load. Feed quality, ration, timing and actual intake affect both growth and water conditions. Aeration, circulation, water exchange, solids removal and biofiltration must match the system. Biosecurity, observation and timely diagnosis are central to disease control. [1,2,5]

STOCK	FEED	MANAGE	MEASURE
Known species, life stage, health status, number and biomass	Defined feed, ration, timing, intake and uneaten-feed record	Aeration, circulation, exchange, solids, biosecurity and health care	Survival, growth, feed conversion, biomass, yield and quality

Define Output Before Comparing It

A statement such as ‘output improved’ is incomplete unless the starting population, production period, feed and calculation method are known. At minimum, comparison requires the following records.

OUTCOME	WHAT THE RECORD SHOULD SHOW
SURVIVAL	Animals remaining alive relative to the verified starting number, adjusted for transfers or sampling.
GROWTH	Change in individual weight or length over a defined interval, with sampling method recorded.
FEED CONVERSION	Feed supplied or consumed divided by biomass gain, using one declared calculation basis.
STANDING BIOMASS	Estimated number alive multiplied by representative mean weight at the stated time.
HARVEST OUTPUT	Total harvested mass and number, with size distribution, rejects and product-quality observations.

Harvest Begins the Aquatic-Food Pathway

Harvest water, handling surfaces, ice, time and temperature can affect product safety and quality. Hazards differ among finfish, crustaceans and filter-feeding molluscs and by whether the product is eaten raw or cooked. Water should be fit for its intended production or processing use, supported by food-hygiene controls. [3,4]

WATER	ANIMALS	INPUTS	HARVEST
Source, treatment, exchange and quality records	Species, hatchery or seed source, lot and health status	Feed lots, medicines, chemicals and withdrawal records	Unit, date, quantity, handling, ice or water and cold chain

FOUNDATION OBSERVATION AND RESEARCH BOUNDARY

What the Foundation Has Reported

Aura Research Foundation has reported that selected adaptive-frequency support involving the water environment in an aquaculture setting was associated with a change, including improvement, in production output. The observation raises a research question, but the available record did not isolate the contribution of water response from stocking, feed, husbandry, weather, disease, measurement or other environmental variables.

What the Observation Does Not Establish

It does not demonstrate causation, a recognised conditioning mechanism, improved animal health, safer or more nutritious food, or transfer of a frequency effect to a person who consumes the food. It is not a substitute for water-quality monitoring, biosecurity, veterinary or aquatic-animal-health care, responsible husbandry, food-safety control or legal requirements.

Working Hypothesis H8

Selected adaptive-frequency support may be followed by reproducible aquaculture differences under matched conditions. The hypothesis remains open to support, modification or rejection. The proposed 400 to 752 Hz interval and adaptive or non-adaptive classifications are investigational; they are not aquaculture water-quality limits or species requirements.

MATCH	COMPARE	LOG	TEST
Independent ponds or tanks; same source, species, life stage, stocking biomass and production period	Randomly assigned defined support, sham, untreated and other justified comparison conditions	Water variables, feed, aeration, exchange, weather, health events, treatments and mortality	Predefined survival, growth, feed conversion, biomass and harvest outcomes; independent replication

The experimental unit is the independently treated pond or tank—not each animal within it. Adequate replicate units, coded assessment, analysis at unit level and replication by an independent team are needed to avoid false certainty.

Reader takeaway. Water quality directly shapes the environment in which aquatic animals live, but output also depends on species, stocking, feed, husbandry and health. The Foundation's reported observation warrants controlled study, not a conclusion. Chapter 10 returns to the origin of water in source, Earth, geology and minerals.

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PART TWO ESTABLISHED WATER SCIENCE

CHAPTER 10

Source Water Earth Geology and Minerals

Reader question *How can source and geology change the water that reaches a person farm or aquaculture system?*

Every water sample has an origin and a journey. Rainfall interacts with air and collection surfaces. Surface water reflects its catchment. Groundwater reflects recharge, soil, aquifer materials, flow paths and time below ground. A mixed supply carries more than one history. These differences can be measured and may affect treatment, agriculture, aquaculture and human use. [1-3]

RAINWATER	SURFACE WATER	GROUNDWATER	MIXED SUPPLY
Begins relatively low in dissolved minerals; atmosphere, catchment, roof and storage can change it	Rivers, lakes and reservoirs respond comparatively quickly to runoff, weather and catchment activity	Aquifer flow, rock contact, depth, residence time and recharge shape composition	Blending or source switching can change chemistry and treatment needs without a new public name

Source Is the First Part of Exposure History

A name such as river water, bore water, municipal water or rainwater is only a starting label. The precise intake or well, collection date, season, catchment event, source blend and sampling point can all matter. Without that information, two samples with the same general label may not be comparable.

Surface Water and Groundwater Are Connected

Streams can recharge aquifers, and groundwater can sustain streams and wetlands. Pumping, drought or flooding can change these exchanges. Contamination in one part of the system may therefore move into another, sometimes quickly and sometimes over years. [1]

‘Natural’ describes origin; it does not certify safety, purity, mineral balance or suitability for a particular use.

SOURCE AND EARTH PATHWAY

Water Changes as It Moves Through the Landscape

The water cycle connects atmosphere, land, surface water and groundwater. At every stage, water can dissolve substances, carry particles, exchange ions, support microorganisms and mix with water of a different age or origin.

FROM ATMOSPHERE AND LAND TO AQUIFER AND USE			
1 ATMOSPHERE AND CATCHMENT Rain and deposited material reach natural or built collection surfaces. <i>Air and catchment history</i>	2 SURFACE WATER Runoff, tributaries, sediment, organisms and human activity mix in rivers, lakes and reservoirs. <i>Runoff and seasonal mixing</i>	3 SOIL AND UNSATURATED ZONE Infiltration, filtration, sorption, dissolution and biological reactions alter recharge. <i>Soil and mineral reactions</i>	4 AQUIFER AND WELL Rock contact, flow path, redox conditions, residence time and mixing shape groundwater. <i>Aquifer geology and abstraction</i>
COLLECTION → TREATMENT → DISTRIBUTION AND STORAGE → FINAL USE			

Figure 10 Source geology treatment storage and containers

Geology Acts Through Contact Conditions and Time

Minerals dissolve at different rates. Acidity, carbon dioxide, temperature, oxygen and redox conditions affect which constituents remain dissolved or precipitate. Ion exchange on clays and aquifer materials can alter the proportions of calcium, magnesium, sodium and other ions. Longer residence does not guarantee better water; it simply provides a different opportunity for reaction. [2]

An Aquifer Is Not One Uniform Container

Water can travel through fractures, pores or several geological layers, then mix near a well. Depth, pumping rate and seasonal recharge may change the contribution from each zone. Nearby wells can therefore differ, and one well can change over time.

Established hydrogeology explains source differences through measurable flow and water-rock processes. It should be documented before an additional Earth-energy interpretation is considered.

COMPOSITION AND CHANGE

Mineral Content Is a Chemical Profile

Source water may contain major ions, trace elements, dissolved gases, organic matter, microorganisms and suspended particles. Some constituents affect taste, hardness, corrosion or scaling; others matter because of health, crop, aquaculture or treatment requirements. The intended use determines which analyses and standards apply. [2,3]

MEASUREMENT GROUP	WHAT IT MAY HELP EXPLAIN	WHAT IT CANNOT SHOW ALONE
CONDUCTIVITY OR TDS	Overall dissolved-ion content and change between samples	Which ions are present, their individual concentrations or safety
MAJOR IONS HARDNESS AND ALKALINITY	Rock-water interaction, salinity pattern, buffering and scaling tendency	Every trace contaminant, pathogen or suitability for every use
pH OXYGEN AND REDOX	Chemical environment controlling solubility, corrosion and microbial processes	A complete explanation without temperature, field method and other analyses
TRACE ELEMENTS AND RADIONUCLIDES	Possible geogenic inputs such as arsenic, fluoride, iron, manganese or uranium	Their presence from appearance, taste or total mineral content
MICROBES AND TURBIDITY	Faecal or environmental contamination risk and suspended material	All pathogens from one indicator or all chemical hazards from clarity
NUTRIENTS AND ORGANIC CHEMICALS	Land-use, sanitation, agricultural, industrial or natural organic influences	Source or risk without suitable analytes, history and standards

Season and Land Use Can Rewrite the Profile

Rain can dilute some constituents while washing sediment, microbes, nutrients or chemicals into surface water. Drought can concentrate salts and encourage source switching. Groundwater composition can change as recharge, pumping and flow paths change. Sanitation, agriculture, mining, industry, waste disposal and fuel storage create source-specific contamination routes. [3-5]

Conductivity, total dissolved solids, taste, odour or clarity may flag change, but none is a complete safety test. Minerals that are useful or harmless at one concentration may be unsuitable at another or for another use.

SOURCE PROTECTION AND RESEARCH RECORDS

Protect the Source Before Depending on Treatment

Source protection begins by understanding the catchment or recharge area, locating hazards and interrupting contamination routes. Treatment remains essential where required, but preventing contamination can reduce risk and make treatment more reliable. A catchment-to-consumer water-safety approach joins protection, treatment, distribution and verification. [3-5]

MAP	IDENTIFY	CONTROL	VERIFY
Recharge area, catchment, flow route and vulnerable points	Natural and human hazards relevant to the source	Prevent, contain or reduce hazards before they reach the source	Inspect, monitor, investigate change and update the source plan

Identify the Sample and Define the Batch

A sample represents a stated place, time and collection method. A research batch is a defined volume or production lot sharing a documented source and collection history. The batch boundary must be set before any exposure or split-sample comparison; otherwise source variation can be mistaken for a treatment effect.

IDENTIFY	CONTEXT	COLLECT	TRACK
Source name and type; well or intake ID; location, depth or catchment	Date, time, season, recent rain, abstraction, source mix and visible events	Sampling point, flushing, container, preservation, temperature and method	Unique sample and batch codes, custody, split samples, analyses and later exposure

The Boundary for WEH Interpretation

An OMRDA or operator-mediated classification is not a measurement of minerals, contamination, potability or source protection. Proposed Earth-energy influences, adaptive and non-adaptive classifications and the 400 to 752 Hz interval remain investigational. They must not replace laboratory analysis or applicable drinking-water, irrigation, aquaculture or food-safety requirements.

Reader takeaway. Source, geology, season and land use can create measurable water differences. Good records allow those differences to be separated from later treatment, storage and investigational exposures. Chapter 11 follows water from treatment through distribution, storage and containers.

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PART TWO ESTABLISHED WATER SCIENCE

CHAPTER 11

Treatment Distribution Storage and Containers

Reader question *What happens to water between its source and final use?*

Source water rarely reaches its final use unchanged. It may pass through several treatment steps, kilometres of pipe, service tanks, building plumbing, household devices and one or more containers. Each stage can improve safety or suitability, introduce a new variable, or allow quality to deteriorate if operation and hygiene fail. [1-3]

SOURCE	TREATMENT	DISTRIBUTION	STORAGE	FINAL USE
Origin, source variation and raw-water hazards	Processes selected for defined hazards and quality goals	Pipes, pressure, tanks, residence time and maintenance	Container, closure, cleaning, temperature, light and duration	Drinking, irrigation, aquaculture, food or another purpose

Treatment Is Selected for a Purpose

A process is chosen because a source assessment identifies microorganisms, particles, dissolved chemicals, salinity, hardness, taste, corrosion potential or another defined problem. The required treatment depends on the intended use and applicable standards. A treatment name alone does not show that the process was designed, operated or verified correctly.

One Process Rarely Does Everything

Safe systems often use a treatment train: one step prepares water for the next, while monitoring confirms performance. For example, particle removal can improve downstream disinfection, and post-treatment adjustment may reduce corrosion. The sequence must be evaluated as a whole.

History Continues After Treatment

Treatment is not the end of the exposure record. Distribution, storage and handling determine what reaches the final tap, farm, aquaculture unit, food process or drinking glass.

TREATMENT METHODS

Different Processes Solve Different Problems

Treatment performance depends on water quality, equipment design, validated operating conditions, maintenance and verification. The summary below describes broad purposes; it is not a design guide or a substitute for qualified operation.

PROCESS	PRIMARY PURPOSE	WHAT STILL NEEDS CONTROL
FILTRATION	Removes particles; selected media or membranes may remove specified microorganisms or dissolved constituents.	Performance depends on process, pore or media, loading, integrity and maintenance.
REVERSE OSMOSIS	Pressure drives water through a membrane that reduces many dissolved ions and other contaminants.	Membrane integrity, pretreatment, recovery, waste stream and post-treatment need control.
BOILING	Inactivates waterborne microorganisms when correctly applied.	Does not remove most dissolved salts or chemicals; cooled water can be recontaminated.
CHLORINATION	Inactivates susceptible microorganisms and can provide a protective residual.	Dose, demand, pH, temperature and contact time matter; by-products require management.
OZONE	Strong oxidation and disinfection within a controlled treatment process.	Usually leaves no durable residual; generation, contact and by-products must be managed.
ULTRAVIOLET	Inactivates microorganisms when validated dose and water transmittance are adequate.	Leaves no disinfectant residual; fouling, lamp condition, flow and downstream hygiene matter.
MINERAL ADJUSTMENT	Changes pH, alkalinity, hardness, corrosion control or product composition for a defined purpose.	Requires specified chemicals, dose, verification and compatibility with the intended use.

A Treatment Train Needs Operational Evidence

Useful evidence includes flow, pressure, dose, contact time, membrane or filter integrity, lamp or ozone-system status, disinfectant residual where relevant, calibration, alarms, maintenance and before-and-after quality results. The variables depend on the process.

Disinfection protects health. It must not be weakened, stopped or bypassed because of taste, belief, an unverified device claim or an investigational frequency reading.

THE COMPLETE WATER RECORD

Document the Chain Before Comparing Samples

A complete record links the original batch to each process, transfer, container and final use. This is necessary for routine quality management and for research: otherwise a difference caused by source, treatment performance or handling may be attributed to the wrong exposure.

STAGE	MINIMUM RECORD	WHY IT MATTERS
SOURCE AND BATCH	Source type and ID; location or supplier; collection date and time; source mix; raw-water sample code	Separates natural and seasonal source variation from later changes
TREATMENT	Process sequence; equipment ID; operating settings; dose or validated condition; maintenance; treatment time	Defines what was actually done rather than relying on a treatment label
VERIFICATION	Relevant before-and-after chemistry, microbiology, physical measures, operational checks and laboratory methods	Shows performance for the intended purpose and identifies unresolved hazards
DISTRIBUTION	Pipe and tank route; materials; residence time; pressure events; residual where applicable; sampling point	Captures change or recontamination between treatment and collection
STORAGE AND CONTAINER	Container material and ID; cleaning; sealing; fill level; transfers; transport; duration; opening history	Records conditions that can affect contact, contamination and comparison
ENVIRONMENT AND FINAL USE	Temperature and light; storage location; nearby exposures under study; final-use date, route and recipient lot	Connects the water batch to its later human, plant, aquaculture or food pathway

Table 4 Source treatment storage container and environment record

Keep Identity Through Every Split and Transfer

Each sample needs a unique code while retaining its parent batch code. Record subsampling, mixing, treatment, transfer, opening and final use in sequence. If one batch is divided for a controlled comparison, every split should receive equivalent handling except for the predefined variable.

Record the Actual Condition

‘Filtered’, ‘UV’, ‘RO’, ‘boiled’ or ‘bottled’ is not enough. Record the equipment, operating condition, time, post-treatment container and verification result. Missing details should be marked unknown rather than reconstructed from memory.

DISTRIBUTION SYSTEMS

Safe Water Can Change After Treatment

A distribution system is a physical, hydraulic, chemical and biological environment. Water age, pressure, pipe material, temperature, disinfectant residual, deposits and maintenance affect the condition at the point of use. Building systems add another layer after the public or community network. [1,3]

TREATMENT OUTLET Verified water leaves the treatment process	PRIMARY NETWORK Mains, valves, pressure and residence time	SERVICE CONNECTION Building entry, meter and cross-connection control	BUILDING SYSTEM Tank, plumbing, heater, filter or point-of-use device	TAP OR COLLECTION Final sampling point and handling before use
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Manage the Route Not Only the Treatment Plant

Protection requires integrity, pressure management, cross-connection control, suitable materials, tank hygiene, planned maintenance, incident response and monitoring at representative and vulnerable points.

NETWORK FEATURE	POSSIBLE CHANGE	CONTROL PRINCIPLE
PRESSURE AND INTEGRITY	Leaks, breaks or pressure loss can allow intrusion where a contamination route exists.	Maintain integrity; manage pressure; inspect and repair; control cross-connections.
RESIDENCE AND STAGNATION	Long or variable residence can change disinfectant residual, temperature and chemistry.	Manage turnover and flushing; investigate low-use or dead-end areas.
BIOFILM AND SEDIMENT	Surface growth and deposits can harbour organisms and increase disinfectant demand.	Control nutrients and sediment; clean tanks; maintain pipes and devices.
CORROSION AND MATERIAL CONTACT	Water chemistry and time can promote corrosion or release from unsuitable materials.	Use approved materials; control corrosion; sample at relevant points.
BUILDING AND HOUSEHOLD SYSTEMS	Roof tanks, filters, heaters, hoses and taps add local history after the utility boundary.	Clean and service as specified; prevent backflow; record final-point conditions.

Biofilm Is a Condition to Manage

Microorganisms can attach to wetted surfaces and form biofilms. Their presence does not mean every organism is harmful, but biofilms can shelter microorganisms, contribute to taste or odour problems and complicate control. Deposits, stagnation and warm conditions may support regrowth. Management should follow the system's risk assessment and operating plan.

STORAGE AND CONTAINERS

The Container Becomes Part of the Water History

Water contacts the container body, closure, liner, seal and dispensing surface. Suitability depends on the material and grade, water chemistry, temperature, duration, cleaning and intended use. No material is universally best for every source and condition.

CONTAINER	PRACTICAL FEATURE	WHAT TO VERIFY
CERTIFIED POLYMER	Lightweight, sealable and resistant to breakage	Food-contact suitability, heat and sunlight exposure, scratches, reuse and cleaning instructions
GLASS	Low permeability and chemically resistant for many ordinary uses	Breakage, closure quality, light exposure, thermal shock and cleaning
STAINLESS STEEL	Durable and opaque when the grade and fabrication suit the water	Alloy grade, welds and seams, corrosion, dents, cap components and cleaning access
LINED CERAMIC OR EARTHENWARE	May be useful for traditional or cooling storage when designed for potable water	Food-safe glaze or lining, porosity, cracking, cover, dispensing and thorough cleaning

Explanatory container comparison. Use materials approved for the intended water and follow the manufacturer's cleaning, temperature and reuse instructions.

Storage Conditions Can Change Risk

Opening, dipping a cup, touching the outlet, refilling without cleaning or using a wide unprotected mouth can introduce contamination. Heat and long residence may increase microbial growth or material interaction. Light can support algal growth in suitable conditions and can affect light-sensitive constituents or disinfectant residuals.

SEAL AND DISPENSING Limit hand, cup, dust, insect and backflow contact	CLEANING Use a method suitable for the material; dry or refill hygienically	TIME AND TEMPERATURE Record duration; avoid unnecessary heat and long stagnation	LIGHT AND TRANSPORT Protect where needed; record sunlight, movement and transfers
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Transfers Reset the Handling Record

Pouring water into another bottle, tank, dispenser or process vessel creates a new contact event. Record the receiving container, cleaning status, date and time. For comparisons, avoid repeated transfers unless they are identical across samples.

SAFETY AND EVIDENCE BOUNDARY

Post-treatment Safety Depends on Several Barriers

Source protection, appropriate treatment, validated operation, distribution integrity, hygienic storage and surveillance work together. A failure after treatment can undo an earlier safety gain. Suspected contamination, equipment failure or loss of disinfection should be handled under the responsible authority's water-safety procedure—not by an investigational assessment. [1–4]

The UV Qualification Must Remain Exact

A later chapter discusses a Foundation observation involving selected UV-treated mineral-water samples. It does not apply to every UV-treated water and does not show that ultraviolet disinfection is unsafe, that microbiological protection should be abandoned, or that the reported response caused disease. UV disinfection and conventional testing remain water-safety matters; any AURA or operator-mediated response is separate and investigational.

Compare Treatment or Storage Under Controls

A defensible comparison begins with one characterised water batch and changes only the defined treatment or storage variable. Unsafe water should not be given to people or used in a food pathway merely to create a comparison.

SPLIT ONE BATCH	DEFINE THE PROCESS	MATCH AFTERCARE	VERIFY SEPARATELY
Characterise the source, then divide it into coded comparison samples	Record equipment, validated settings, dose or exposure, maintenance and time	Use equivalent containers, seals, handling, temperature, light and storage interval	Assess safety and conventional quality independently from coded investigational readings

The proposed 400 to 752 Hz interval and adaptive or non-adaptive classifications are not measures of disinfection, filter performance, chemical safety, container approval or shelf life. Conventional verification remains primary.

Reader takeaway. Water continues to change after its source. Treatment, distribution, storage and container history must be recorded before samples are compared. Part Three now introduces the meaning and scope of Water Energy Hygiene while preserving these safety foundations.

Selected Sources

[1] World Health Organization. Guidelines for Drinking-water Quality. 4th edition incorporating the first and second addenda. Geneva: WHO; 2022.

[2] World Health Organization. Guidelines for Drinking-water Quality: Small Water Supplies. Geneva: WHO; 2024.

[3] World Health Organization. Water Safety in Distribution Systems. Geneva: WHO; 2014.

[4] LeChevallier MW, Au KK. Water Treatment and Pathogen Control: Process Efficiency in Achieving Safe Drinking-water. London: IWA Publishing on behalf of WHO; 2004.

[5] US Environmental Protection Agency. Ultraviolet Disinfection Guidance Manual for the Final Long Term 2 Enhanced Surface Water Treatment Rule. EPA 815-R-06-007. Washington DC; 2006.

PART THREE

Water Energy Hygiene Concepts and Observations

This part introduces the Foundation's operational model, its central hypothesis and the three biological pathways through which water may be studied. The purpose is to turn preliminary observations into precise questions rather than conclusions.

Every chapter keeps three elements visible: what the Foundation reports, how the framework interprets the report, and what controlled test is required. Conventional water safety and recognised biological measures remain independent and primary.

The Path Through Part Three

STAGE	PART THREE COVERAGE
DEFINE THE MODEL	Chapters 12 and 13 Meaning, scope and operational classifications
STATE THE HYPOTHESIS	Chapter 14 Water Exposure Response and Retention Hypothesis
TEST DIRECT INTAKE	Chapter 15 Water to human pathway and short-term outcomes
TEST FOOD ROUTES	Chapters 16 and 17 Plant-food and aquaculture-food pathways

The sequence matters. Terms are defined before classifications are introduced; the working hypothesis is stated before any pathway is interpreted; and each pathway receives its own controls and outcomes.

How to Read This Part

Foundation observation. A reported pattern is a reason to test, not proof of causation or benefit.

Operational language. A category organises assessment and comparison; it is not an established biological limit or safety grade.

Required test. Coding, controls, blinding, recognised measurements, predefined outcomes and replication determine what can be concluded.

PART THREE WATER ENERGY HYGIENE CONCEPTS AND OBSERVATIONS

CHAPTER 12

Meaning and Scope of Water Energy Hygiene

Reader question *What exactly does Water Energy Hygiene propose to study?*

Water Energy Hygiene is a Foundation-defined, investigational reader and research framework within Lifestyle Energy Hygiene, the third pillar of the Energy Hygiene Framework. It studies whether the complete source-to-use history of an identified water sample, including defined exposures, is associated with repeatable assessment responses or measurable biological and production outcomes after conventional differences are controlled. [3-5]

SOURCE	TREATMENT	DISTRIBUTION	STORAGE	FINAL USE
Origin, geology, season and starting quality	Processes, operating conditions and verification	Pipes, tanks, residence time and transfers	Container, sealing, cleaning, light and temperature	Drinking, irrigation, aquaculture or food

Complete water pathway. A defensible study follows one identified batch across every stage instead of treating the final sample as if it had no history.

Its Primary Home Is the Third Pillar

Drinking, hydration, food preparation, irrigation-linked food and aquatic food are repeated parts of everyday life. For that reason, Water Energy Hygiene belongs primarily within Lifestyle Energy Hygiene. It is not a fourth pillar.

The Framework Is Cross Cutting

Source, Earth, treatment, storage and surroundings create links with Environmental Energy Hygiene. A predefined response observed in a person creates a research link with Personal Energy Hygiene. Irrigation connects the subject with Agro Horticultural Energy Hygiene. These are pathway links, not new pillars.

The Starting Point Is a Traceable Sample

A source name such as river, borewell, bottled or filtered water is not a complete identity. The batch, collection time, treatment, transfer, container, storage interval and final use must be recorded before an additional response is interpreted.

THREE LEVELS OF ATTENTION

Keep Different Questions in Different Evidence Columns

Water Energy Hygiene does not collapse water safety, exposure documentation and an investigational reading into one result. The same sample can generate three distinct records, each answering a different question.

LEVEL	QUESTION	EXAMPLES
1 CONVENTIONAL QUALITY AND SAFETY	Is the water suitable and safe for the intended use?	Microbiology, chemistry, minerals, physical properties, toxicology, radiology and applicable standards
2 COMPLETE EXPOSURE HISTORY	What happened to this identified batch before final use?	Source, treatment, distribution, storage, container, time, temperature, light, transport and surroundings
3 INVESTIGATIONAL RESPONSE	Does a predefined comparison show a repeatable assessment or biological difference?	Coded operator-mediated readings, retention testing and recognised human, plant or aquaculture outcomes

The Levels Work Together but Are Not Interchangeable

Level 1 determines whether recognised safety and suitability requirements are met. Level 2 establishes what happened to the water. Level 3 asks an additional research question. A Level 3 classification cannot correct a Level 1 failure, replace a laboratory result or fill a missing Level 2 record. [1,2]

FIRST Protect safety and suitability	THEN Document the complete history	ONLY THEN Interpret a controlled research comparison
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Why Exposure History Deserves Its Own Level

Two samples with the same source label may differ because of season, treatment performance, pipe residence, container contact, temperature, light, storage time or handling. Without this history, an apparent investigational difference may be attributed to the wrong condition.

A Reading Is Not Yet an Explanation

An operator-mediated response may reflect sample differences, procedure variation, operator effects, the assessment environment or chance. The research design must allow these explanations to be separated rather than assuming that water acquired and retained an undefined energy.

WORKING VOCABULARY

Define the Terms Before Testing the Claim

The terms below are working definitions for this book and the proposed research programme. They make records comparable without presenting a Foundation construct as established water science.

TERM	WORKING DEFINITION
WATER ENERGY HYGIENE	A Foundation-defined reader and research framework that examines complete water history, defined exposures and repeatable investigational responses while conventional safety remains primary.
COMPLETE WATER HISTORY	The traceable sequence from source and batch through treatment, distribution, storage, container, time, surroundings and final use.
DEFINED EXPOSURE	A specified condition applied or encountered at a recorded intensity or setting, duration, location and time, with an appropriate comparator.
CONVENTIONAL VERIFICATION	Recognised testing and operational evidence used to establish safety, quality or suitability for the intended use.
INVESTIGATIONAL RESPONSE	A predefined assessment or outcome recorded under a research method; it is not automatically a physical property, benefit or causal effect.
OPERATIONAL CLASSIFICATION	A Foundation category used to organise observations and comparisons. It is not a safety grade, diagnosis or established biological limit.
RETENTION INTERVAL	The elapsed time between the end of a defined exposure and a later assessment of the same identified water sample.
RESPONSE WINDOW	The predefined period in which a water, human, plant or aquaculture outcome will be assessed after exposure or use.
BIOLOGICAL OR PRODUCTION OUTCOME	A prespecified human, plant or aquaculture measure evaluated separately from an operator-mediated water classification.

Table 5 Operational definitions for Water Energy Hygiene

Operational Does Not Mean Physically Established

A term can be useful for coding a study even when its proposed mechanism has not been demonstrated. The protocol must state what was set, what was observed, how it was measured and which alternative explanations remain possible.

Frequency Language Begins in Chapter 13

The proposed 400 to 752 Hz interval, outside-band nonadaptive categories and within-band deficit are Foundation-defined operational classifications. They are not established biological limits or direct measurements of emitted frequencies from water.

ONE MEDIUM THREE ROUTES

Follow Water to the Outcome Being Studied

Water reaches people directly and indirectly. Each route starts with an identified water history, but it becomes a different study once the water is consumed, enters a crop system or supports an aquatic organism.

ROUTE	PATHWAY	MEASURES TO RECORD
DIRECT INTAKE	SOURCE > TREATMENT > STORAGE > DRINKING WATER > HUMAN	Water condition, intake volume and timing; recognised hydration and human measures
PLANT AND FOOD	WATER > SOIL AND SEED > PLANT > HARVESTED FOOD > HUMAN	Agronomy, soil and water quality; plant physiology, yield, composition and food safety
AQUACULTURE FOOD	WATER > POND OR TANK > AQUATIC ORGANISM > FOOD > HUMAN	Species, stocking, feed and husbandry; water quality, growth, survival, health and biomass

Three-route pathway. The arrows show exposure order and traceability; they do not prove that a frequency or beneficial property transfers along the route.

One Question Does Not Create One Outcome

A short-term human assessment cannot establish plant performance. A crop observation cannot establish nutrition or human benefit. An aquaculture output change cannot identify the contribution of water apart from species, stocking, feed, husbandry or environment. Each route needs its own controls, recognised measures and replication.

Cross Cutting Does Not Mean a Fourth Pillar

ENVIRONMENTAL LINK Source, Earth, structures, objects and surrounding conditions belong in the exposure record.	PERSONAL LINK A predefined response in a person may be studied after intake without moving WEH out of Pillar Three.	AHEH LINK Irrigation connects water with soil, plants, harvested food and later human research.
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Lifestyle Energy Hygiene remains the primary home because intake and food are the routes by which the water history enters daily life. The other domains help define exposures and outcomes.

What the Framework Seeks

The research question is whether a predefined difference can be reproduced after conventional variables are measured and controlled, and whether any later biological or production outcome is reliable enough to justify the next study stage.

SCOPE AND EVIDENCE BOUNDARY

What Water Energy Hygiene Includes and Excludes

A useful scope is wide enough to capture the full pathway and narrow enough to prevent an observation from becoming a safety, health or mechanism claim without evidence.

THE SCOPE INCLUDES	THE SCOPE DOES NOT INCLUDE
Complete source-to-use records and conventional water-quality evidence	A fourth pillar or a substitute for Environmental, Personal or Lifestyle Energy Hygiene
Coded comparisons of defined exposures, sham conditions and matched controls	A method for declaring unsafe water safe or rejecting necessary treatment and disinfection
Tests of whether a recorded response repeats, persists, weakens or disappears	Proof of water memory, frequency transfer, a hidden mechanism or emitted Hz from water
Separate human, plant and aquaculture studies using recognised outcomes	Medical diagnosis or treatment, improved-health claims, or certification of food or water
Positive, negative, mixed and null findings, with alternative explanations kept open	A conclusion based on one operator, one sample, one uncontrolled comparison or belief

Safety Certification Remains Outside the Framework

No operator-mediated classification can certify drinking water, irrigation water or aquaculture water; declare a contaminant harmless; or justify reducing necessary treatment. Accredited testing, validated operation and applicable water, agriculture, aquaculture and food-safety requirements remain primary. [1,2]

Water Memory Is Not an Established Conclusion

The framework asks whether a response is repeatable and whether it persists after a defined exposure. This is a retention question. It is not proof that water stores information, that an energy has transferred, or that a particular mechanism exists.

Reader takeaway. Water Energy Hygiene is an investigational framework within Lifestyle Energy Hygiene. It combines conventional quality evidence, complete exposure history and controlled response testing across direct intake, plant-food and aquaculture-food routes without allowing an investigational result to replace safety or establish benefit.

Selected Sources

[1] World Health Organization. Guidelines for Drinking-water Quality. 4th edition incorporating the first and second addenda. Geneva: WHO; 2022.
[2] World Health Organization. Guidelines for Drinking-water Quality: Small Water Supplies. Geneva: WHO; 2024.
[3] Aura Research Foundation. Water Energy Hygiene: Public Awareness and Research Collaboration Brochure. Hyderabad; 2026.
[4] Aura Research Foundation. Water Energy Hygiene Concept Note. Hyderabad; 2026.
[5] Aura Research Foundation. Energy Hygiene: The Missing Link in Health. Hyderabad; 2026.

PART THREE WATER ENERGY HYGIENE CONCEPTS AND OBSERVATIONS

CHAPTER 13

Adaptive and Nonadaptive Operational Classifications

Reader question *What do the proposed 400 to 752 Hz classifications mean within the Foundation's research model?*

Aura Research Foundation uses adaptive, nonadaptive and within-band deficit as operational classifications for organising operator-mediated comparisons. The proposed adaptive interval runs from 400 through 752 Hz inclusive. Settings below 400 Hz and above 752 Hz are placed in proposed nonadaptive regions. [1-3]

These labels do not establish that water emits the nominated frequency, that the interval is a biological law, or that an outside-band classification proves harm. They define how a study input or response will be recorded.

Three Records Must Remain Separate

FREQUENCY LABEL	RESPONSE STRENGTH	WATER QUALITY
The nominated setting or range assigned in the protocol A study input or reference label	The predefined magnitude or field extent recorded under the assessment procedure An investigational outcome	Recognised physical, chemical, microbiological and other measurements Safety and suitability evidence

A Hertz Label Identifies the Protocol Setting

Hertz is a unit of cycles per second. In this framework, a value such as 500 Hz ordinarily identifies the nominated reference or induction setting used in the procedure. An electronic source setting may be verified independently, but that verification does not show that the water later emits, stores or transfers 500 Hz.

Classification Is Not Certification

An adaptive or nonadaptive label is not a drinking-water grade, contaminant test, diagnosis, treatment decision or measure of nutritional quality. Conventional testing and applicable safety requirements remain primary. [4]

THE PROPOSED OPERATIONAL INTERVAL

Read the Boundaries Literally

The map uses two inclusive boundary values. A nominated setting of exactly 400 Hz or exactly 752 Hz belongs to the proposed adaptive interval. Only settings lower than 400 Hz or higher than 752 Hz fall in the outside-band regions.

BELOW 400 Hz PROPOSED NONADAPTIVE	400 THROUGH 752 Hz PROPOSED ADAPTIVE INTERVAL	ABOVE 752 Hz PROPOSED NONADAPTIVE
Every nominated setting lower than 400 Hz	Both boundary values are included	Every nominated setting higher than 752 Hz

Figure 11 The proposed 400 to 752 Hz operational map

Foundation-defined operator-mediated classification. Not an established biological limit or measured water emission.

Boundary Rules

SETTING RULE	OPERATIONAL CLASSIFICATION
400 Hz	Inside the proposed adaptive interval
752 Hz	Inside the proposed adaptive interval
Lower than 400 Hz	Proposed below-band nonadaptive classification
Higher than 752 Hz	Proposed above-band nonadaptive classification

What the Map Organises

The scale organises nominated settings, comparison groups and coded assessment results. It allows investigators to predefine an in-band target, a below-band comparator, an above-band comparator or a matched sham condition.

What the Map Does Not Establish

The scale is not a spectrum measured from the water, a natural boundary demonstrated in human or aquatic biology, or a substitute for dose, amplitude, duration, waveform and exposure geometry. Those details must be recorded separately whenever they apply.

EXPOSURE AND SAMPLE LABELS

Name the Assignment Before Interpreting the Outcome

A treatment label records what the protocol assigned. A response label records what was later observed. Keeping them separate prevents adaptive-conditioned water from being treated as proof that the water changed or produced benefit.

TERM	WORKING USE
ADAPTIVE-CONDITIONED WATER	Water assigned to a documented exposure using one or more nominated settings inside 400 to 752 Hz. The term records the treatment assignment, not benefit or successful retention.
NONADAPTIVE-ASSOCIATED WATER	A sample recorded with a proposed nonadaptive response under the specified Foundation procedure. The report must state whether the basis is outside-band or target-specific.
SHAM EXPOSURE	Matched apparatus, handling and timing without the intended active setting, designed to control expectation and procedure effects.
OFF-TARGET EXPOSURE	A real setting chosen because it is not the test target. It may be inside or outside the proposed interval and must be identified in advance.
RESPONSE WINDOW	The predefined period after exposure or use in which the water, human, plant or aquaculture response will be assessed.

Off Target Does Not Automatically Mean Outside Band

An off-target comparator can be another setting inside 400 to 752 Hz, or a setting below or above the interval. In some Foundation protocols, an in-band off-target setting that produces a predefined disruptive response may be recorded as nonadaptive-associated for that target. The numerical setting remains inside the interval; the target-specific response must be reported separately.

One Setting Is Not the Same as a Range

SINGLE SETTING	GROUPED SETTINGS	FULL-INTERVAL PROTOCOL
One nominated label with intensity, duration and timing recorded	A predefined subset, including order and simultaneous or sequential delivery	The defined series or range used to represent 400 through 752 Hz, with step pattern recorded

Do not describe a single-setting test as full-band conditioning. For grouped or full-interval protocols, record every included setting, order, dwell time, repetitions, waveform or source condition and total duration.

WITHIN BAND DEFICIT

A Reduced Response Does Not Move the Frequency

A within-band deficit is a reduced response at a nominated setting that remains inside 400 to 752 Hz. The term describes response strength relative to a predefined reference; it does not mean that the numerical frequency is absent or has moved outside the interval.

COMPARISON	ILLUSTRATIVE RESPONSE	INTERPRETATION
MATCHED REFERENCE		Predefined comparison response
OBSERVED SAMPLE		Reduced response strength
FREQUENCY LABEL	612 Hz example	Unchanged and still inside the interval

Figure 12 A within-band deficit at a nominated setting

Foundation-defined operator-mediated classification. Not an established biological limit or measured water emission.

Illustrative bars show relative response only; they are not experimental data. Within Foundation terminology, response strength may be represented by frequency-specific AURA or field extent, deflection or another prespecified score. It is not a direct physical amplitude measurement from water.

Choose the Reference Before Collecting Data

REFERENCE	WHAT IT COMPARES
WITHIN-SAMPLE BASELINE	The same coded sample assessed before the defined exposure
MATCHED SHAM	A same-batch sample receiving equivalent handling without the intended exposure
REPEATED REFERENCE	A stable coded reference distribution assessed across sessions and operators

What Deficit Does Not Mean

A within-band deficit is not a new fourth zone, a diagnosis, evidence of disease, proof of low water quality or a demonstrated lack of biological energy. It remains an operational comparison that must be tested for repeatability and sensitivity to operator and procedural effects.

MEASUREMENT BOUNDARY

Do Not Substitute One Type of Measurement for Another

A complete record separates the setting assigned to the protocol, the operator-mediated response and the recognised measurements of the water. Agreement or disagreement among them is a result to analyse, not a reason to redefine one as another.

RECORD	WHAT IS RECORDED	HOW IT IS CHECKED	WHAT IT CANNOT SHOW
FREQUENCY LABEL	Hz setting assigned to a reference or induction source; single value, group or interval	Source log; equipment identity; electronic verification when applicable	Does not show that water emits, stores or transfers that frequency
RESPONSE STRENGTH	Operator-mediated deflection, field extent, frequency-specific AURA or another predefined score	Coded repeated assessment under a fixed procedure	Does not establish physical amplitude, mechanism, safety or benefit
CONVENTIONAL WATER QUALITY	pH, conductivity, dissolved oxygen, minerals, contaminants, microbiology and other relevant variables	Validated instruments and accredited or qualified methods	Does not by itself validate an investigational classification

The OMRDA Boundary

OMRDA is used by the Foundation as an operator-mediated resonance assessment apparatus. Its observed deflection depends on an apparatus-operator interaction and must be studied for repeatability, blinding, inter-operator agreement and environmental sensitivity. It is not a conventional water-quality instrument, spectrum analyser or direct photon detector.

Verify the Source Without Overstating the Water

When an electronic frequency source is used, an oscilloscope or frequency counter can verify the source output under stated conditions. This validates the apparatus setting. It does not demonstrate persistence in the water after exposure; retention requires a separate blinded time-course study.

A SAMPLE RECORD	B QUALITY RECORD	C RESEARCH RECORD
Source, batch, treatment, container, time and code	Recognised measurements and suitability or safety decision	Blinded operational classification and predefined response

No cross-substitution. Record A identifies the sample, Record B supports safety and suitability, and Record C contains the investigational classification. A result in one record cannot silently replace missing evidence in another.

RESPONSIBLE OPERATIONAL USE

Turn a Classification into a Testable Record

Operational language becomes scientifically useful only when the target, comparison, procedure and decision rule are fixed before the condition is revealed. The minimum sequence below applies whether the expected result is adaptive, nonadaptive, deficit or null.

	STEP	MINIMUM ACTION
1	PREDEFINE	State target, comparator, setting or range, duration, response window and outcome.
2	CHARACTERISE	Identify the batch and measure relevant conventional water-quality variables.
3	CODE AND RANDOMISE	Conceal sample identity and allocate sham, target and off-target conditions.
4	VERIFY SOURCES	Confirm reference or electronic source settings independently where applicable.
5	ASSESS BLIND	Use a fixed operator-mediated procedure without access to condition labels.
6	REPLICATE	Repeat across samples, sessions, operators and sites before interpreting a pattern.

Permit Every Result

A credible study must be able to find the predicted classification, the opposite classification, a mixed pattern or no reproducible difference. Null results are evidence about the procedure and hypothesis; they should not be relabelled as hidden responses.

Keep the Public Meaning Narrow

The terms in this chapter may describe a Foundation research record. They must not be used to certify water, diagnose a person, claim disease prevention, rank foods, reject necessary disinfection or present water memory as established science.

Reader takeaway. The proposed 400 to 752 Hz map classifies nominated settings inside and outside a Foundation-defined interval. A within-band deficit concerns reduced response strength at an in-band setting. Neither classification is a conventional water-quality result or proof that water emits or retains the labelled frequency.

Selected Sources

- [1] Aura Research Foundation. Water Energy Hygiene: Public Awareness and Research Collaboration Brochure. Hyderabad; 2026.
- [2] Aura Research Foundation. Water Energy Hygiene Concept Note. Hyderabad; 2026.
- [3] Aura Research Foundation. Water Energy Hygiene Scientific Conceptual Paper and Research Framework. Hyderabad; 2026.
- [4] World Health Organization. Guidelines for Drinking-water Quality. 4th edition incorporating the first and second addenda. Geneva: WHO; 2022.

PART THREE WATER ENERGY HYGIENE CONCEPTS AND OBSERVATIONS
CHAPTER 14

The Water Exposure Response and Retention Hypothesis

Reader question *Can a defined exposure be followed by a measurable water response that persists for a limited time?*

The Water Exposure Response and Retention Hypothesis, or WERRH, is the central testable proposition of Water Energy Hygiene. It asks whether a defined exposure is followed by a reproducible response in a coded water sample, whether any response remains after the exposure ends, and whether that water is later followed by a separately measured biological outcome. [1,2]

WERRH is structured as a sequence of tests. It does not begin by assuming that water memory, retention, a transfer mechanism or a beneficial or harmful effect exists.

Three Claims Require Three Different Tests

WATER RESPONSE	POSSIBLE RETENTION	BIOLOGICAL OUTCOME
Does a coded exposed sample differ reproducibly from matched controls on a predefined measure? A distinct evidential step	If a response is found, does it remain detectable after the source is removed and time passes? A distinct evidential step	Does separately tested water exposure precede a reproducible human, plant or aquaculture outcome? A distinct evidential step

Retention Is Conditional

A retention study becomes meaningful only after a response is defined and shown to exceed the variation of its matched controls. If no reproducible initial response is found, the study cannot claim that an unseen response was retained.

Water Physics Provides Context Not Proof

Liquid water responds to established variables and its hydrogen-bond network reorganises rapidly. Those facts support careful measurement of exposure conditions, but they do not demonstrate a persistent frequency-specific imprint or validate WERRH. [3,4]

THE CENTRAL TESTABLE MODEL

Every Stage Begins as a Question

The chain below separates what is done to the water, what is measured in the sample, what may remain after the source is removed, and what is tested later in a biological system.

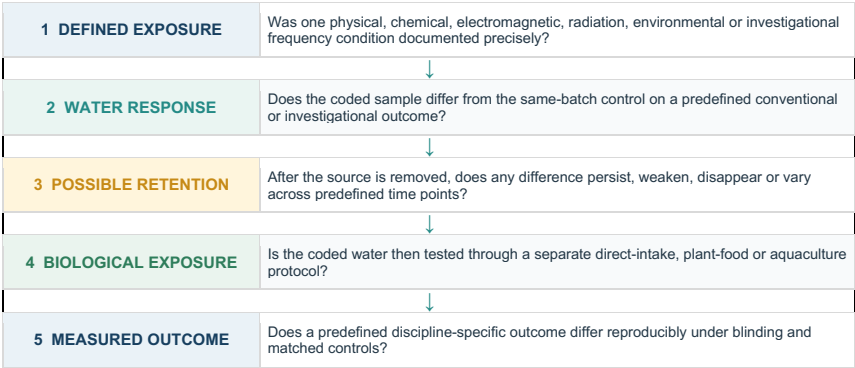


Figure 13 The Water Exposure Response and Retention Hypothesis

Each arrow is a research question. The diagram does not establish water memory, mechanism, causation, safety, benefit or a measured emission from water.

A Break in the Chain Changes the Claim

A reproducible operator-mediated difference would support only that defined procedure. A claim that the water itself changed requires an independently detectable water measure. A biological claim then requires a separate controlled study with its own outcome, comparison and ethics or welfare safeguards.

Independent Detection Raises the Evidence Level

OMRDA remains an operator-mediated investigational method, not a conventional water-quality test or direct photon detector. Agreement with a suitable independent analytical method would strengthen evidence; disagreement would also be a result requiring explanation.

EIGHT WORKING HYPOTHESES

Document the Exposure Before Testing the Outcome

Every study must name its exposure category and record the relevant dose or setting, duration, distance, geometry, apparatus, container and surroundings. Physical, chemical, electromagnetic, radiation, environmental and investigational frequency exposures are documentation categories. They may overlap, but they must not be assumed to act by the same mechanism.

For an investigational frequency study, 400 through 752 Hz is the Foundation-defined proposed adaptive interval. Values below 400 Hz and above 752 Hz are proposed nonadaptive classifications. These labels identify protocol settings or operator-mediated classifications, not measured emissions retained by water.

Eight Questions Organise the Programme

CODE	WORKING HYPOTHESIS	TESTABLE PROPOSITION
H1	Water exposure response	A defined exposure may be followed by a reproducible measurable response in a water sample.
H2	Response retention and decay	Any recorded response may persist, weaken or disappear after the exposure ends.
H3	Adaptive frequency conditioning	Selected proposed adaptive settings may differ from sham, off-target and outside-band comparisons.
H4	Treatment and disinfection comparison	Same-batch samples receiving defined treatments may show different patterns after conventional characterisation.
H5	Storage container and environment	Storage duration, container transfer and surroundings may alter or confound a recorded response.
H6	Direct water to human response	Selected water conditions may be followed by reproducible short-term differences in defined human outcomes.
H7	Water to plant and food response	Conditioned irrigation water may be followed by reproducible plant, crop or food differences under controls.
H8	Water to aquaculture response	Selected adaptive-frequency support may be followed by reproducible aquaculture differences under matched conditions.

Table 6 Eight working hypotheses under WERRH

Every Hypothesis May Be Modified or Rejected

The eight propositions are not conclusions. A valid programme must permit positive, opposite, mixed and null results and must revise its terms when reproducible evidence does not support them.

RETENTION AND DECAY

Retention Is a Time Course Not a Label

Retention means that a predefined response remains distinguishable from its reference after the exposure has ended. It must be assessed at stated intervals, under the same decision rule, without assuming that the response will persist or decline smoothly.

IMMEDIATE	1 HOUR	6 HOURS	24 HOURS	48 HOURS	7 DAYS
					
first test	present	weaker	lower	near reference	no difference

Hypothetical response retention and decay timeline

Illustrative pattern only. The bars are not experimental data, expected values or evidence that a retained response exists.

Define the Time Words Before Analysis

TERM	WORKING MEANING
IMMEDIATE RESPONSE	A predefined difference at the first stated time after the exposure ends.
PERSISTENCE	A reproducible difference remains at one or more later, predefined time points.
WEAKENING	The recorded difference becomes smaller relative to the immediate response and its reference.
DISAPPEARANCE	The sample is no longer distinguishable from the reference under the stated decision rule.
DECAY	A prespecified trend across several time points, estimated rather than inferred from one follow-up.
NULL RESPONSE	No reproducible difference is detected at the planned times under the stated method.

The Clock Starts When the Exposure Ends

Record the end of exposure and the exact assessment time. Immediate, one hour, six hours, 24 hours, 48 hours and seven days are illustrative points, not universal biological windows. Temperature, transport, opening, handling and container changes during the interval must also be logged.

A Time Course Does Not Supply a Mechanism

Even a reproducible decline would describe when the recorded difference changes. It would not by itself identify what produced the difference or show that frequency information was stored and transferred.

OBSERVATION AND EVIDENCE STATUS

Observations Generate Questions They Do Not Resolve

Aura Research Foundation reports preliminary patterns involving selected water conditions, short-term human assessments, irrigation and aquaculture output. The register records what prompted WERRH and states the present evidential boundary. [1,2]

CODE	FOUNDATION REPORT	STATUS IN THIS BOOK
W01	Selected proposed adaptive-frequency exposures were reportedly followed by an increased operator-mediated water field or AURA response.	Preliminary Foundation observation; no independently detected water change is established.
W02	Consumption of selected adaptive-conditioned water was reportedly followed by a short-term increase in measured human AURA.	Preliminary before-and-after association; no clinical or hydration benefit is established.
W03	Selected UV-disinfected mineral-water samples reportedly showed a nonadaptive-associated assessment pattern, followed after intake by reduced measured human AURA.	Sample-specific report; it does not show that UV disinfection is harmful or unsuitable.
W04	Irrigation with selected adaptive-frequency-conditioned water was reportedly followed by increased plant field or adaptive response.	Preliminary plant observation; controlled physiological, agronomic and water-quality outcomes are required.
W05	Selected adaptive-frequency support was reportedly associated with a change in aquaculture output.	Reported association; matched water-quality, species, stocking, feed and husbandry controls are required.
W06	Persistence after the source was removed and decay across repeated time points remain open questions.	WERRH hypothesis; a blinded time course and independent detection are still required.

Table 7 Foundation observation register and evidence status

What the Register Shows

The entries support asking structured research questions. They do not establish a retained water response, a causal pathway to a person, plant or aquatic organism, or a health, safety, nutrition or treatment conclusion.

A Single Follow Up Cannot Establish Retention

A before-and-after result or one post-exposure assessment gives no decay curve. Retention requires repeated coded measurements, matched controls, predefined time points and a result that survives replication across samples, sessions and operators.

What Would Change the Evidence Status

Replicated blinded water differences would address W01 and W06. An independent analytical correlate would strengthen a claim that the water changed. Controlled pathway-specific outcomes would address W02 to W05. Evidence in one register entry cannot automatically upgrade another.

The Present Position

At present, the register supports developing controlled protocols and testing whether the reported patterns survive blinding, comparison, time and independent replication. It does not support product, safety, nutrition or therapeutic claims.

FROM HYPOTHESIS TO COMPARISON

Use Comparisons That Can Disconfirm the Claim

The minimum comparison set keeps batch, handling and post-exposure history visible. It must be selected before coding and allocation so that an unexpected or null result remains interpretable.

CONDITION	WHAT IS MATCHED	QUESTION ANSWERED
SAME-BATCH UNTREATED	Source, batch, container and assessment schedule	Whether the exposed sample differs from water not receiving the intended procedure
MATCHED SHAM	Handling, apparatus, duration and environment without the intended active input	Whether expectation or the procedure itself contributes to the result
TARGET EXPOSURE	All recorded variables except the predefined condition of interest	Whether the target condition is associated with the planned response
OFF-TARGET EXPOSURE	A real non-target setting, identified before allocation	Whether a result is target-specific rather than a response to any active setting
TREATMENT COMPARATOR	Same batch with one defined treatment such as UV, heat or filtration	Whether a treatment-specific difference remains after conventional characterisation
CONTAINER ENVIRONMENT	Water condition with container, light, temperature or location varied systematically	Whether post-exposure history alters or confounds the response

Table 8 Water sample comparison and control conditions

Characterise the batch, randomise the conditions, conceal the codes, assess the planned time points and repeat the full sequence. Reproducibility within the Foundation should precede independent replication, and both should be reported whether the result supports WERRH or not. [5]

Keep Three Biological Pathways Separate

Direct intake, plant-food and aquaculture-food studies share a water history but do not share an outcome. Human studies require ethics approval and defined physiological or assessment outcomes. Plant studies require agronomic and physiological outcomes. Aquaculture studies require water-quality, animal-health, growth, survival and production outcomes.

Reader takeaway. WERRH asks whether a defined exposure is followed by a reproducible water response, whether any response remains after the source is removed, and whether a later biological outcome can be demonstrated in a separate controlled study. Every link may be supported, modified or rejected. Water memory, mechanism and benefit are not presumed.

Selected Sources

[1] Aura Research Foundation. Water Energy Hygiene Scientific Conceptual Paper and Research Framework. Hyderabad; 2026.
[2] Aura Research Foundation. Water Energy Hygiene Concept Note. Hyderabad; 2026.
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PART THREE WATER ENERGY HYGIENE CONCEPTS AND OBSERVATIONS

CHAPTER 15

The Direct Water to Human Pathway

Reader question *What did the Foundation report after selected water exposures and intake, and what would a controlled human study require?*

The direct pathway begins with water's complete history, not with the moment of drinking. Source, treatment, storage, container, temperature, time and handling may affect conventional quality or create confounding differences. A human study must therefore preserve the chain from source to participant. [1–3]

SOURCE	TREATMENT	STORAGE	DRINKING WATER	HUMAN
origin and catchment	safety processes	container and time	coded intake sample	predefined outcome

The direct pathway at a glance

Three Layers Must Remain Separate

1 SAFETY ELIGIBILITY	Confirm that the water is potable under applicable microbiological, chemical and toxicological requirements.
2 EXPOSURE HISTORY	Record source, treatment, batch, storage, container, temperature, time and handling before allocation.
3 RESEARCH QUESTION	Test a coded water condition and a predefined short-term human outcome without presuming benefit or harm.

Conventional Safety Comes First

Only water already judged suitable for intake under applicable standards may enter a human protocol. An investigational adaptive or nonadaptive classification cannot certify water, overturn a failed laboratory result, replace necessary disinfection or justify drinking an unsafe sample. [3]

The human question is narrower: after safe coded water is consumed under controlled conditions, does a prespecified short-term outcome differ reproducibly from its matched controls?

REPORTED OBSERVATION LAYER

What Prompted the Direct-Intake Question

Aura Research Foundation reports two preliminary patterns from selected samples and short-term human assessments. The diagram records the reported sequence; it is not a clinical study record, proof of a water change or evidence of benefit or harm. [1,2]

SELECTED PROPOSED ADAPTIVE CONDITION	SELECTED UV-DISINFECTED MINERAL-WATER SAMPLE
Water exposed at a selected setting within the Foundation-defined 400–752 Hz proposed adaptive interval	A selected commercially prepared mineral-water sample whose documented treatment history included UV disinfection
↓ OPERATOR-MEDIATED WATER ASSESSMENT ↓	↓ OPERATOR-MEDIATED WATER ASSESSMENT ↓
Reported increased measured water field or AURA response	Reported nonadaptive-associated classification in selected samples
↓ INTAKE ↓	↓ INTAKE ↓
Reported short-term increase in measured human AURA or adaptive-field response	Reported lower short-term measured human AURA in some observations

Figure 14A Foundation-reported direct-intake observation layer

WHAT IS REPORTED	A sequence of selected sample assessments and short-term before-and-after human assessments.
WHAT IS NOT ESTABLISHED	A water change detected independently, a retained frequency, causation, mechanism, hydration quality, clinical benefit or harm.
UV BOUNDARY	The report concerns selected samples. It does not show that UV disinfection is unsafe, unsuitable or responsible for the recorded pattern.

Why the Two Lanes Are Not Symmetrical Conclusions

The labels adaptive and nonadaptive are Foundation-defined operator-mediated classifications. The proposed 400–752 Hz interval names protocol settings; it is not a measured emission from water, a biological limit or a proven dose range. OMRDA is not a direct photon detector, calibrated field-strength meter, clinical diagnostic device or established measure of cellular homeostasis.

Accordingly, neither lane can be used to advise a person which water to drink. Both become questions for coded same-batch comparison and independent measurement.

CONTROLLED TEST LAYER

Convert the Observation into a Human Protocol

The ethical and scientific route adds gates before intake and controls after it. Ethics approval, freely given informed consent, justified risk, privacy, qualified oversight and ongoing safety monitoring are required before research with human participants begins. [4,5]

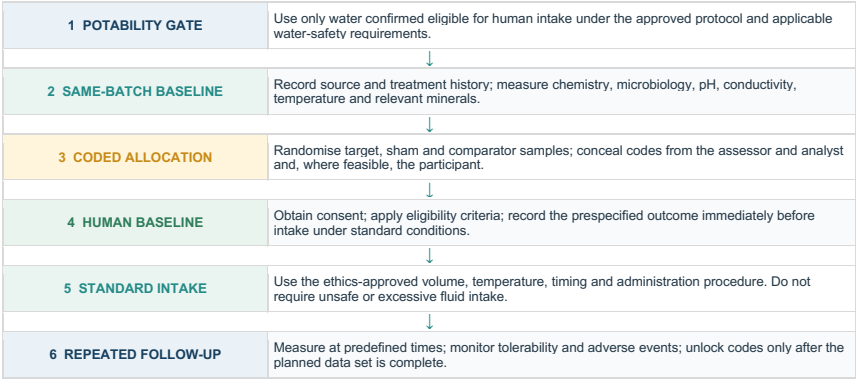


Figure 14B Controlled direct-intake test pathway
Figure 14 Direct intake observation and controlled-test pathway

Predefine the Human Outcome

A protocol must specify the primary outcome, its measurement procedure, acceptable reliability, timing, analysis and decision rule before codes are revealed. A short-term OMRDA or AURA assessment is an investigational outcome. It cannot be translated into hydration status, health, diagnosis, treatment or disease prevention.

Protect the Right to Stop

Participants may refuse or withdraw without penalty. The protocol must state who can pause intake or follow-up, how adverse events are assessed and reported, and when the study must stop or be modified. [4,5]

MEASUREMENT BEFORE AND AFTER INTAKE

Time Points Must Be Chosen Before the Study

A direct-intake claim depends on a timed sequence. T0 is the immediate pre-intake baseline; T1 is a protocol-defined early follow-up; T2 is a later follow-up. For example, a feasibility study might examine 15–30 and 60–120 minutes, but those intervals are illustrative—not validated response windows or medical guidance.

OUTCOME DOMAIN	PRE-INTAKE	EARLY FOLLOW-UP	LATER FOLLOW-UP	WHY RECORD IT
WATER IDENTITY & QUALITY	Before coding: source, batch, treatment, container, chemistry, microbiology and temperature	Verify sample and intake temperature	Record any handling or storage deviation	Shows whether compared samples remained eligible and comparable
INVESTIGATIONAL WATER ASSESSMENT	Coded pre-intake assessment using the prespecified OMRDA procedure	Usually no new water reading unless the protocol requires it	Optional retention reading on separately reserved aliquots	Tests the water-level observation without confusing it with a human result
HUMAN AURA / FIELD ASSESSMENT	T0 immediately before intake under standard conditions	T1 at a predefined early interval	T2 and any later predefined interval	Tests whether a coded short-term operator-mediated difference is reproducible
PHYSIOLOGICAL OUTCOME	Baseline only if scientifically justified and ethics-approved	Repeat at the prespecified valid time	Repeat only where justified by the protocol	Provides a discipline-specific outcome; no measure should be added after seeing results
TOLERABILITY & SYMPTOMS	Record relevant pre-existing symptoms and recent intake	Ask with the same neutral instrument	Repeat at the stated interval	Separates a reported experience from an assumed effect
ADVERSE EVENTS / STOPPING	Confirm eligibility and stopping rules	Monitor and act under the safety plan	Complete follow-up and required reporting	Protects participants and documents all outcomes, not only favourable ones

Table 9 Direct-intake outcome and time-point matrix

Use Reserved Aliquots for Water Follow-Up

If possible retention is tested, reserve coded aliquots before intake and assess them on their own time course. Do not infer a retained water response from a later human reading, and do not infer a human response from a later water reading.

Record Deviations Before Unblinding

Late assessments, incorrect volumes, broken seals, code exposure, unexpected food or fluid intake, equipment faults and incomplete follow-up must be logged. The analysis plan should state how deviations and missing observations will be handled. [5]

The Schedule Must Serve Safety and Validity

The clinical and ethics team—not the frequency classification—sets eligibility, intake volume, follow-up duration and stopping criteria. No participant should be asked to restrict necessary fluids or consume excessive water for this research question.

CONTROLS AND HUMAN-STUDY SAFEGUARDS

Compare Conditions That Can Challenge the Claim

The comparison set is selected before allocation. Not every study requires every condition, but every chosen comparator must answer a stated question and preserve potability and same-batch traceability.

CONDITION	WHAT IS MATCHED OR VARIED	QUESTION ANSWERED
SAME-BATCH UNTREATED	Same source, batch, container, timing and handling without the intended exposure	Reference for natural batch and session variation
MATCHED SHAM	Same apparatus, contact, duration and environment without the intended active input	Tests effects of handling, setting and expectation
TARGET CONDITION	A selected setting within the proposed 400–752 Hz adaptive interval	Tests the prespecified Foundation classification
OFF-TARGET / OUTSIDE BAND	A prespecified real setting, including a below-400 or above-752 comparison where justified	Tests specificity rather than response to any active setting
TREATMENT COMPARATOR	A same-batch defined treatment comparison; include UV only when it is the stated research question	Tests a treatment-specific difference without judging general safety

Masking Must Follow the Code

Use neutral containers and labels. Conceal allocation from outcome assessors and analysts; mask participants where sensory equivalence and ethics permit. Record every unblinding. A person who conditioned or labelled samples should not also interpret the participant outcome when role separation is feasible. [5]

Standardise What Happens Around Intake

WATER	volume set by protocol; temperature; container; time since preparation; code integrity
PARTICIPANT	eligibility; consent; recent food and fluid intake; medicines if relevant; withdrawal rights
SESSION	time of day; room; posture; rest period; activity; assessor instructions; device or method checks
ROLES	separate sample preparation, code custody, intake supervision, outcome assessment and analysis where feasible

Plan for Expectation and Order Effects

A parallel design avoids carryover but may require more participants. A crossover design can reduce between-person variation but requires randomised order, an evidence-based washout and analysis for period or carryover effects. The protocol—not convenience after results are seen—must choose the design.

Register and Report the Study

Prospective registration, a dated analysis plan and reporting of positive, mixed, negative and inconclusive findings help prevent selective interpretation. Human-research requirements of the study location remain controlling. [4,5]

INTERPRETING A DIRECT-INTAKE STUDY

The Water Result and Human Result Are Separate

A direct pathway is coherent only when each evidential step is examined on its own terms. The combinations below prevent a result at one level from being used to fill a gap at another.

WATER RESULT	HUMAN RESULT	PERMITTED INTERPRETATION
REPLICATES	REPLICATES	Supports a defined association under that protocol. It still does not establish mechanism, clinical benefit or causation without further evidence.
REPLICATES	DOES NOT REPLICATE	Supports only a water-level result. It does not support the proposed direct human pathway.
DOES NOT REPLICATE	REPLICATES	The pathway is internally discordant. Recheck chance, masking, measurement, conventional variables and alternative explanations.
DOES NOT REPLICATE	DOES NOT REPLICATE	Does not support the tested direct-intake proposition under the stated conditions. The null result must be reported.

Describe the Protocol Not a Property of All Water

PERMITTED	"In this coded study, the prespecified short-term outcome differed between groups."
AVOID	"Adaptive water improves hydration or health," "UV water is harmful," or "water transferred a frequency to the body."

What Would Strengthen the Evidence

First, demonstrate stable within- and between-operator performance. Next, reproduce the coded water-level result. Then test the human outcome under ethics oversight. An independently measured water correlate and replication by investigators outside the Foundation would materially raise the evidence level. Absence of either is informative, not a reason to redefine the outcome after analysis.

Reader takeaway. The Foundation's direct-intake observations identify a research question, not a drinking-water recommendation. A responsible test begins with safe potable water, preserves the complete water history, uses coded same-batch controls and predefined time points, protects participants and reports every outcome. It cannot infer hydration quality, clinical benefit, harm or UV-disinfection safety from an operator-mediated short-term response.

Selected Sources

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[3] World Health Organization. Guidelines for Drinking-water Quality, 4th ed, incorporating the first and second addenda. Geneva: WHO; 2022.
[4] World Medical Association. Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Participants. Amended October 2024.
[5] International Council for Harmonisation. Guideline for Good Clinical Practice E6(R3). Final version adopted 6 January 2025.

PART THREE WATER ENERGY HYGIENE CONCEPTS AND OBSERVATIONS
CHAPTER 16

The Water to Plant to Food to Human Pathway

Reader question *How can a water-centred question be followed from irrigation through plants and food to people?*

This indirect pathway links the agricultural-water component of Water Energy Hygiene with Agro-Horticultural Energy Hygiene. Through food and nutrition, both sit within Lifestyle Energy Hygiene, the third pillar of the Energy Hygiene Framework. Irrigation water reaches the root zone, interacts with seed, soil, plant inputs and the growing environment, becomes part of plant function and crop production, and is followed through harvest, storage and food use. [1–4]

WATER	SOIL & SEED	PLANT	HARVESTED FOOD	HUMAN
documented batch	root-zone setting	growth and response	composition and safety	later ethics-approved study

The water-centred source-to-plate pathway

AFCIW Is an Operational Term

Adaptive Frequency Conditioned Irrigation Water, abbreviated AFCIW, allows a test condition to be named and traced. It does not place a conclusion inside the name.

WHAT THE TERM IDENTIFIES	A coded irrigation-water condition prepared under a documented protocol using one or more selected settings within the Foundation-defined proposed adaptive interval.
WHAT THE TERM DOES NOT ESTABLISH	That water retained, emitted or transferred a frequency; that it is agronomically superior; or that a later crop or human difference was caused by the conditioning step.

Within this book, the proposed 400–752 Hz adaptive interval and below- or above-band comparisons remain Foundation-defined protocol settings and operator-mediated classifications. They are not measured emissions from water or established plant limits.

Keep Four Outcome Levels Separate

PLANT	germination, survival, physiology, stress response and growth
CROP	yield, biomass, quality grade and harvest consistency
FOOD	composition, contaminants, residues, microbiology, storage and processing
HUMAN	a separately approved food-exposure outcome; never inferred from the crop result

OBSERVATION AND CONTROLLED STUDY LAYERS

Follow the Same Batch from Source to Plate

The upper evidence layer records what the Foundation reports. The controlled-study layer shows what must be done before any step can support the next. Every stage keeps its own outcome, code and decision rule. [1–3]

PATHWAY STAGE	FOUNDATION-REPORTED OBSERVATION LAYER	CONTROLLED-STUDY LAYER
WATER / AFCIW	Selected conditioned irrigation water reportedly showed a changed operator-mediated water response.	Characterise one batch; code untreated, sham, target and off-target conditions; match water volume and schedule.
SOIL & SEED	Selected water and adaptive-treatment observations were reportedly followed by differences in germination.	Randomise identical seed lots across matched soil or media; record germination proportion, timing and seedling vigour.
PLANT	Selected AFCIW was reportedly followed by increased measured plant adaptive response and differences in output.	Predefine physiology, growth, stress and yield outcomes; keep inputs, pests, space and microclimate comparable.
HARVESTED FOOD	Related AHEH observations reportedly showed differences in selected harvested-food profiles.	Code harvest batches; test composition, contaminants and food safety; preserve maturity, storage and processing history.
HUMAN	Selected food comparisons were reportedly followed by short-term differences in operator-mediated human response.	Proceed only after plant and food evidence; use an ethics-approved, blinded food study with its own prespecified outcome.

Figure 15 Water to plant to food to human

A WATER RESULT	does not establish a plant response
A PLANT RESULT	does not establish a food-composition difference
A FOOD RESULT	does not establish a human response or health benefit

A Pathway Is Not Automatic Transfer

Water is physically essential to germination, transport, growth and crop production. That established dependence does not demonstrate that an investigational frequency classification is retained by water, transferred into a plant or carried into a person. Each proposed link must be measured independently.

Traceability Connects Results Without Merging Them

The same code family may connect a water aliquot, plot, harvest and food sample. Traceability shows history; it does not turn an association into causation.

A Null Link Stops the Proposed Chain

If the prespecified water or plant outcome does not replicate, the study should report that result and stop using the failed link to justify a downstream food or human claim. A later exploratory observation cannot repair an earlier missing step.

FOUNDATION OBSERVATIONS AND PRESENT LIMITS

Four Reports Create Four Research Questions

Aura Research Foundation reports preliminary differences across selected conditioned-water, germination, plant, harvested-food and short-term human comparisons. The register preserves the observations while stating what they do not yet establish. [1–3]

CODE	FOUNDATION REPORT	CURRENT EVIDENCE STATUS
P01	Selected adaptive-frequency-conditioned irrigation water was reportedly followed by increased measured plant adaptive response and overall field extent.	Preliminary operator-mediated association; no independent water or plant mechanism is established.
P02	Selected water or adaptive-treatment comparisons were reportedly followed by differences in germination and early establishment.	Seed lot, viability, temperature, moisture, substrate and allocation require control.
P03	Differences were reportedly observed in plant output and selected harvested-food profiles.	Yield, composition and food safety require objective laboratory and agronomic endpoints.
P04	Selected food comparisons were reportedly followed by short-term differences in measured human AURA or adaptive response.	Separate ethics-approved human research is required; nutrition or health benefit is not established.

Agricultural Inputs Are a Separate Variable

Related AHEH observations reportedly found different operator-mediated plant and food profiles when natural manure and biological crop protection were compared with chemical fertiliser and pesticide systems. That comparison does not prove an AFCIW effect. In a water-only trial, the input programme must be identical across water conditions; in an input study, water must be held constant or included as a planned factorial variable. [3]

Conventional Causes Must Be Visible

SEED & GENETICS	cultivar, seed age, viability, pre-treatment and lot heterogeneity
SOIL & INPUTS	substrate, fertility, manure or fertiliser, biological or chemical crop protection and microbiome
WATER & IRRIGATION	source, salinity, pH, nutrients, contaminants, microbiology, volume, timing and delivery method
SPACE & ENVIRONMENT	plot position, light, temperature, humidity, wind, pests, disease and operator handling
HARVEST & AFTERCARE	maturity, sampling, washing, storage, container, transport, processing and analytical batch

These variables are not nuisances to be mentioned after the result. They are plausible causes of germination, growth, yield, composition and storage differences and must be balanced, measured or modelled before allocation codes are opened.

Present Evidence Position

The observations justify controlled research. They do not establish superior food, improved nutrition, disease prevention, health benefit, water memory or causal frequency transfer.

RECOGNISED AND INVESTIGATIONAL OUTCOMES

Measure Each Stage in Its Own Discipline

Irrigation-water suitability, plant performance, crop output, food composition and safety, and human research use different methods and standards. The matrix prevents one convenient field reading from replacing these recognised outcomes. [4–7]

PATHWAY STAGE	RECOGNISED OUTCOMES	INVESTIGATIONAL OUTCOME	KEY CONTROLS
IRRIGATION WATER	Source, batch, pH, electrical conductivity or salinity, major ions or nutrients, relevant contaminants and microbiology	Coded water response and any separately planned retention time course	Same batch, volume, schedule, container, handling and delivery method
GERMINATION & ESTABLISHMENT	Seeds sown, germinated proportion, time to emergence, abnormal seedlings, survival and seedling vigour	Frequency-specific plant adaptive response after a defined assessment time	Cultivar, seed lot, viability, substrate, depth, temperature, light and moisture
PLANT PHYSIOLOGY	Growth rate, height or leaf area, biomass, water status, chlorophyll or photosynthetic measures and stress or disease signs	Plant Adaptive Response Profile and Plant Biophysical Field Radius where prespecified	Inputs, irrigation, microclimate, space, pests, disease and assessment timing
CROP OUTPUT	Harvest count, total and marketable yield, fresh and dry mass, size or grade, loss and harvest timing	Combined adaptive field extent or other stated operator-mediated harvest measure	Plot or pot as experimental unit, randomisation, replication, maturity and harvest method
FOOD COMPOSITION & SAFETY	Moisture and selected nutrients or quality markers; residues, contaminants, microbiology and food-safety compliance	Coded harvested-food response profile using the predefined investigational procedure	Sampling plan, batch identity, laboratory method, washing, storage, transport and processing
LATER HUMAN FOOD STUDY	Tolerability and a scientifically justified, ethics-approved physiological or nutritional outcome	Short-term Human Nutritional Response Profile or AURA assessment as an investigational outcome	Safe food, portion, preparation, sensory equivalence, baseline, timing, masking and consent

Table 10 Plant and food outcome matrix

Choose One Primary Outcome

A pilot should identify one primary outcome at one pathway stage and treat the others as secondary or exploratory. Testing many plant traits, field classifications and food measures without a prespecified hierarchy increases the chance of a misleading positive result.

Use Valid Methods and Blind the Laboratory

Record the method, calibration or quality-control procedure, sampling plan, laboratory batch and limit of detection where relevant. Laboratories should receive coded samples and should not be told which outcome is expected.

Safety Is Never an Investigational Classification

Irrigation-water suitability and food safety remain governed by applicable agricultural, environmental and food requirements. An adaptive classification cannot excuse salinity, pathogens, pesticide residues, toxic elements or another failed safety result. [4–6]

A CONTROLLED AFCIW EXPERIMENT

Begin with a Comparison That Can Fail

All irrigation conditions should come from one characterised batch wherever practical. The exposure procedure is applied after aliquoting, and each coded condition follows the same container, transport, irrigation volume and schedule.

CONDITION	WHAT IT RECEIVES	QUESTION ANSWERED
SAME-BATCH UNTREATED	Water from the characterised batch receiving no intended conditioning step	Reference for batch and handling variation
MATCHED SHAM	Same apparatus, duration, container and environment without the intended active setting	Controls the procedure and expectation
TARGET AFCIW	Selected setting within the Foundation-defined proposed 400–752 Hz interval	Tests the prespecified target condition
OFF-TARGET OR OUTSIDE BAND	A prespecified real non-target setting, including below 400 or above 752 Hz where justified	Tests whether any difference is target-specific

Randomise the Experimental Unit

EXPERIMENTAL UNIT	Define the pot, tray, plot or hydroponic channel that independently receives one allocated water condition.
RANDOMISATION	Randomise units within blocks that account for slope, light, temperature, soil gradient or greenhouse position.
REPLICATION	Use enough independent units and repeat batches, runs, seasons or sites to estimate variation.
ROLE SEPARATION	Separate water preparation, code custody, crop care, outcome assessment, laboratory analysis and data analysis where feasible.
ANALYSIS	Predefine the primary outcome, unit of analysis, exclusions, missing-data handling and treatment comparisons before unblinding.

Do Not Treat Every Plant as Independent

When several plants share one pot, tray, channel or irrigation line, the independently allocated unit—not each plant—is usually the experimental unit. Treating subsamples as independent can exaggerate precision. The analysis must reflect the actual allocation structure.

Keep Crop Care Neutral After Allocation

Use written irrigation, nutrition and crop-protection rules across all groups. If rescue watering, pest control or another intervention becomes necessary, apply prespecified criteria without reference to the suspected code and record the reason, timing and amount before unblinding.

Preserve the Chain of Custody

WATER CODE	UNIT ID	HARVEST ID	FOOD SAMPLE	HUMAN STUDY
batch and condition	pot plot or tray	date and maturity	storage and laboratory	only after decision gate

Record transfers, sample quantities, storage conditions, openings, losses and deviations. Retain representative water and harvest samples when the protocol and storage stability permit.

FROM PLANT EVIDENCE TO HUMAN RESEARCH

A Human Food Study Is the Last Step

A short-term human comparison should not begin merely because plants were harvested. It requires replicated plant evidence, characterised and safe food, a justified human question, ethics approval, freely given informed consent, participant protections and a prespecified analysis. [6,7]

GATE	DECISION	PROCEED ONLY WHEN
GATE 1	Water quality and exposure integrity	Compared water remains suitable for the intended crop and equivalent except for the allocated condition.
GATE 2	Plant result	A prespecified plant or crop outcome replicates across independent units and more than one run.
GATE 3	Harvested-food evidence	Composition and food-safety testing is complete, with traceable sampling and storage.
GATE 4	Human-study readiness	A justified question, safe food, ethics approval, consent, masking and a prespecified outcome are in place.
GATE 5	Independent replication	The full pathway result is tested by investigators outside the originating team.

Match the Foods Before Masking the Codes

Compare the same crop and cultivar at equivalent maturity. Standardise edible portion, washing, preparation, serving mass and timing. Assess whether appearance, taste, texture or aroma could reveal allocation. Record recent food and fluid intake and use a baseline and repeated follow-up only where scientifically justified.

Describe Only What the Study Tested

PERMITTED	"Under this controlled protocol, the prespecified plant or food outcome differed between coded irrigation-water conditions."
AVOID	"AFCIW produces superior food," "natural inputs prove the water effect," "this food improves health," or "frequency transferred from water to people."

Reader takeaway. The water-to-plant-to-food pathway is a chain of separate tests. AFCIW names a controlled irrigation condition; it does not establish retention or transfer. Plant, crop and food outcomes must survive matched agronomy, objective measurement and replication before a safe, ethics-approved human food study is considered. No stage alone establishes superior food, nutrition or health benefit.

Selected Sources

[1] Aura Research Foundation. Water Energy Hygiene Public Awareness and Research Collaboration Brochure. Hyderabad; 2026.
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PART THREE WATER ENERGY HYGIENE CONCEPTS AND OBSERVATIONS

CHAPTER 17

The Water to Aquaculture to Food to Human Pathway

Reader question *How should the reported aquaculture-output observation be interpreted and tested?*

Aquaculture is the second indirect food route in Water Energy Hygiene. Water enters the pathway as source water and remains the organism’s living environment in a pond, tank, raceway or recirculating system. Any proposed exposure therefore sits within a complex culture system governed first by water quality, species biology, feed, stocking, husbandry, animal health and welfare, biosecurity, environment and harvest practice. Through aquatic food and nutrition, the pathway belongs within Lifestyle Energy Hygiene, the third pillar of the Energy Hygiene Framework. [1–4]

WATER	POND / TANK	AQUATIC ORGANISM	HARVESTED FOOD	HUMAN
source and exposure history	shared culture environment	health growth and survival	quality safety and traceability	later ethics-approved study

The aquaculture source-to-food pathway

Water Is Both Medium and Habitat

A plant receives irrigation intermittently; an aquatic organism may remain in the culture water continuously. Dissolved oxygen, temperature, pH, salinity, ammonia, nitrite, flow, exchange and aeration can change behaviour, feeding, stress, disease risk, growth and survival. Species- and system-appropriate limits, monitoring and corrective action remain primary. [3,4]

The Frequency Map Defines Conditions Not Conclusions

The proposed 400–752 Hz adaptive interval, the below-400 Hz and above-752 Hz nonadaptive classifications, and any within-band deficit remain Foundation-defined protocol settings and operator-mediated classifications. They are not measured emissions from water, established biological limits or proof of water memory. OMRDA does not replace conventional water-quality or aquatic-animal assessment. WERRH requires each proposed water, retention and biological response to be tested separately.

Keep Five Outcome Domains Separate

WATER AND SYSTEM	water quality, exposure record, hydraulics, aeration and environmental conditions
ANIMAL	health, welfare, behaviour, survival and individual growth
PRODUCTION	feed use, biomass gain, harvestable yield, losses and variability
FOOD	composition, contaminants, residues, microbiology, handling and storage
HUMAN	a separately justified and approved food-exposure outcome, never inferred from output

OBSERVATION AND CONTROLLED STUDY LAYERS

Follow the Pathway Without Assuming Transfer

The observation layer records only what the Foundation reports. The controlled-study layer gives each stage its own measurement and decision rule. Physical continuity through water and food does not demonstrate that an investigational frequency was retained, transferred or biologically active. [1,2]

PATHWAY STAGE	FOUNDATION-REPORTED LAYER	CONTROLLED-STUDY LAYER
WATER / EXPOSURE	Selected adaptive-frequency support was reportedly applied within an aquaculture setting. The report does not by itself identify a retained water property.	Define the setting, apparatus, location, duration, schedule and target. Characterise coded water samples beside conventional water-quality measures.
POND OR TANK	A change in the culture setting was associated with a reported output difference; its water-system contribution is unresolved.	Match volume, water source, flow or exchange, aeration, temperature, light and cleaning. Log dissolved oxygen, pH, salinity and nitrogenous wastes.
AQUATIC ORGANISM	The preliminary report did not establish which biological process, if any, accounted for the output change.	Use one species, strain and life stage; match starting number and biomass; monitor behaviour, health, welfare, growth and survival.
HARVESTED FOOD	Reported improvement in output does not establish superior edible product, composition or safety.	Use a defined harvest rule and coded samples. Measure biomass, edible yield, composition and applicable contaminant, residue and microbiological outcomes.
HUMAN	No human-health or nutritional benefit follows from the aquaculture observation.	Consider human research only after replicated aquaculture evidence and food-safety review, under ethics approval and a separate prespecified protocol.

Matched-unit study logic

REFERENCE	SHAM	TARGET	OFF TARGET
same-batch water no intended support	same procedure no intended target	prespecified setting within 400–752 Hz	prespecified setting outside target

Figure 16 Water to aquaculture to food to human

A WATER OR SYSTEM RESULT	does not establish an animal response
AN ANIMAL RESULT	does not establish better welfare or production unless each was measured
A PRODUCTION RESULT	does not establish superior food, nutrition or safety
A FOOD RESULT	does not establish a human response or health benefit

Name the Exposure Precisely

Record where the support was applied, what received it, how long it operated and whether exposure continued during culture. If the original procedure cannot distinguish direct water exposure from a broader environmental or apparatus condition, report an aquaculture exposure condition rather than claiming conditioned water.

FOUNDATION OBSERVATION AND PRESENT LIMITS

One Reported Association Becomes Several Tests

The brochure preserves a preliminary aquaculture observation without converting it into a causal claim. The word output must also be replaced in a protocol by measurable endpoints such as survival, individual growth, biomass gain, feed-conversion measure or harvestable yield. [1,2]

CODE	FOUNDATION REPORT	CURRENT EVIDENCE STATUS
A01	In preliminary Foundation work, selected adaptive-frequency support applied within an aquaculture setting was associated with a change, including reported improvement, in aquaculture output.	Reported association. The exposure details, outcome definition, controls and independent replication remain to be standardised.
A02	The exact contribution of water response, husbandry, environment and other variables has not been established.	No causal mechanism, retained water property, species-general effect, welfare benefit, food benefit or human effect is established.

Improvement Requires a Stated Baseline

A reported improvement is interpretable only when the comparison group, time period, experimental unit, calculation and uncertainty are known. Higher harvested biomass may reflect greater starting biomass, more feed, better survival, later harvest or a weighing difference. Each possibility leads to a different claim and must remain visible in the data.

Conventional Causes Must Be Controlled

STOCK	species, strain, source, age or life stage, sex where relevant, acclimation, initial number, size distribution and starting biomass
FEED	feed formulation and batch, storage, ration, delivery, uneaten feed, feeding access and feeder behaviour
WATER AND SYSTEM	source, dissolved oxygen, temperature, pH, salinity, ammonia, nitrite, alkalinity, flow, exchange, aeration and system position
HEALTH AND BIOSECURITY	pathogen status, disease, parasites, vaccination or treatment, mortality handling, cleaning and movement controls
ENVIRONMENT AND CARE	season, weather, light, disturbance, density, grading, handling, observer, intervention thresholds and daily husbandry
HARVEST AND ANALYSIS	harvest rule, fasting, sampling, weighing, water retained with biomass, edible yield, storage, processing and laboratory batch

Animal Welfare Cannot Be Inferred from Output

A production increase does not by itself show good welfare. Behaviour, morbidity, injury, disease, mortality, interventions and humane stopping rules require their own records and appropriate professional oversight. Any adverse result remains reportable even when biomass or feed use appears favourable. [3,4]

Present Evidence Position

The report justifies controlled research. It does not establish improved output as a consequence of adaptive-frequency support, nor superior aquatic food, improved nutrition, disease prevention, treatment, human-health benefit or causal frequency transfer.

RECOGNISED AND INVESTIGATIONAL OUTCOMES

Measure Water Animals Production and Food Separately

Aquaculture output is a system result, not a single reading. The matrix pairs recognised disciplinary outcomes with any separately planned investigational assessment and the controls needed to interpret it. [3–7]

PATHWAY DOMAIN	RECOGNISED OUTCOMES	INVESTIGATIONAL OUTCOME	KEY CONTROLS
WATER AND CULTURE SYSTEM	Source and batch; dissolved oxygen, temperature, pH, salinity or conductivity, ammonia and nitrite; relevant alkalinity, hardness, contaminants and microbiology; flow, exchange and aeration	Coded operator-mediated water response and any separately planned retention time course	Matched source, volume, system, sampling time, sensors, calibration, aeration, exchange and handling
ANIMAL HEALTH AND WELFARE	Behaviour and feeding response; injuries, clinical signs, disease events, treatments, mortality and humane intervention records	Prespecified organism-level adaptive-response assessment, if independently justified	Species, strain, age, source, acclimation, density, handling, biosecurity, veterinary oversight and welfare stopping rules
GROWTH AND SURVIVAL	Initial and final number and biomass; individual weight distribution; growth rate, survival and losses with measurement dates	Operator-mediated response profile at a prespecified stage and time	Pond or tank as experimental unit; matched starting number and biomass; blinded sampling and consistent weighing method
FEED USE AND PRODUCTION	Feed offered and recovered; feed-conversion measure with a predefined calculation; biomass gain, harvestable yield and production variability	Frequency-specific comparison only when the exposure contrast and primary production outcome were prespecified	Feed formula and batch, storage, ration, delivery, uneaten feed, mortality accounting, harvest rule and deviations
HARVESTED AQUATIC FOOD	Edible yield and selected composition or quality measures; residues, contaminants, microbiology, handling, cold chain and applicable food-safety compliance	Coded harvested-food response profile using the predefined investigational procedure	Traceable harvest batch, maturity or market size, sampling plan, laboratory method, transport, storage and processing
LATER HUMAN FOOD STUDY	Tolerability and a scientifically justified, ethics-approved physiological or nutritional outcome	Short-term operator-mediated human response as a separate exploratory outcome	Safe food, portion, preparation, sensory equivalence, baseline, timing, masking, consent and prespecified analysis

Table 11 Aquaculture outcome matrix

Choose One Primary Outcome and One Time Point

Select one primary outcome at one pathway level before allocation codes are opened. Define feed conversion and biomass calculations in advance, including how mortalities, escaped animals, sample removals and recovered uneaten feed will be handled. Other outcomes should be labelled secondary or exploratory.

Use Qualified Instruments and Coded Samples

Record sensor identity, calibration, sampling depth and time, laboratory method, quality control and detection limits where relevant. Water, tissue and harvested-food laboratories should receive coded samples and should not be told which result is expected.

Safety and Welfare Remain Primary

An adaptive classification cannot excuse unsuitable water, oxygen stress, toxic ammonia, disease, unacceptable mortality, chemical residues, contaminants, microbiological hazards or another failed health, welfare or food-safety requirement. [3–6]

A CONTROLLED AQUACULTURE EXPERIMENT

Compare Replicated Ponds or Tanks

Use multiple independently allocated ponds or tanks for every condition. Where practical, draw water from one characterised source and standardise filling, acclimation, stocking and the start of exposure. A single pond before-and-after comparison cannot separate the proposed exposure from time, weather, growth, disease or husbandry changes.

CONDITION	WHAT THE UNIT RECEIVES	QUESTION ANSWERED
REFERENCE	No intended support after assignment	Estimates batch, site and handling variation
MATCHED SHAM	Same apparatus, duration and handling without the intended active target	Controls procedural and expectation effects
TARGET CONDITION	Prespecified setting within the Foundation-defined proposed 400–752 Hz interval	Tests the selected adaptive-frequency support condition
OFF TARGET OR OUTSIDE BAND	A prespecified real non-target setting, including below 400 or above 752 Hz where justified	Tests whether any difference is target-specific

Design Around the True Experimental Unit

EXPERIMENTAL UNIT	The independently allocated pond or tank is the unit. Fish sharing one unit are subsamples, not independent treatment replicates.
MATCH AND RANDOMISE	Block units by size, position, water supply or other known gradients; then randomise coded conditions within each block.
STOCK AND FEED	Use the same species, strain, source and life stage; match starting number and biomass; standardise feed batch, ration and delivery.
SYSTEM MONITORING	Record water quality, flow or exchange, aeration, temperature, light, weather where relevant, husbandry, disease events and interventions.
MASK AND SEPARATE ROLES	Separate exposure delivery, code custody, daily care, weighing, laboratory testing and analysis where feasible.
PRESPECIFY ANALYSIS	Name the primary outcome, calculation, time point, unit of analysis, exclusions, missing-data rule and treatment comparison before unblinding.

Do Not Count Every Animal as a Replicate

Animals sharing one pond or tank receive the same allocated condition and influence the same environment. Measurements from those animals describe variation within that unit; they do not create additional independent treatment units. Analysis and sample-size planning must follow the pond or tank allocation structure.

Protect Welfare Before Preserving the Blind

Use prespecified intervention and stopping rules. Care staff must act when animal welfare or system safety requires it, record the event and preserve masking only where this does not delay care. Necessary treatment is never withheld to protect the experiment.

Preserve Traceability to Harvest

SYSTEM CODE	STOCK RECORD	CARE LOG	HARVEST ID	FOOD / HUMAN
pond or tank and condition	source number and biomass	feed water health events	date yield and sample	only after evidence gates

FROM AQUACULTURE EVIDENCE TO HUMAN RESEARCH

Advance Only When Each Evidence Gate Is Met

A later human comparison is a new study, not the final measurement of the pond trial. It requires replicated aquaculture evidence, traceable and safe harvested food, a justified human question, independent ethics review, freely given informed consent and a prespecified analysis. [5–7]

GATE	DECISION	PROCEED ONLY WHEN
GATE 1	Protocol and system integrity	Exposure delivery, coding and ordinary water and system requirements are documented and acceptable.
GATE 2	Animal health and welfare	Monitoring, stopping rules and required animal-care oversight are in place; no adverse finding is hidden by output.
GATE 3	Replicated production result	The prespecified outcome replicates across independent ponds or tanks and more than one run or site.
GATE 4	Harvested-food evidence	Food safety, quality or composition testing is complete for traceable harvest samples.
GATE 5	Human-study readiness	A justified question, safe food, ethics approval, consent, masking and a prespecified outcome are in place.
GATE 6	Independent replication	Investigators outside the originating team test the protocol before public or product claims are considered.

Describe Only What the Study Tested

PERMITTED	"Under this controlled protocol, the prespecified aquaculture outcome differed between coded pond or tank conditions."
AVOID	"Adaptive frequencies improve aquaculture," "the fish or aquatic food is superior," "this food improves health," or "frequency transferred through water and food to people."

Reader takeaway. The Foundation's aquaculture observation is an association that requires a matched, replicated pond or tank study. Water and system conditions, animal health and welfare, growth, survival, feed use, biomass and harvested-food safety must be measured separately. The proposed 400–752 Hz interval identifies one investigational condition; it does not establish retention, transfer, causation, superior food or human-health benefit. Independent replication must precede public or product claims.

Selected Sources

- [1] Aura Research Foundation. Water Energy Hygiene Public Awareness and Research Collaboration Brochure. Hyderabad; 2026.
- [2] Aura Research Foundation. Water Energy Hygiene Scientific Conceptual Paper and Research Framework. Hyderabad; 2026.
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- [7] World Medical Association. Declaration of Helsinki Ethical Principles for Medical Research Involving Human Participants. Amended October 2024.

PART FOUR

Measurement and Research

This part asks how the Foundation's observations could move toward reliable evidence. It examines operator mediation, conventional comparison, experimental controls, prespecified analysis and independent replication.

The order matters. The assessment system must first be described and qualified; water comparisons must then be coded, controlled and independently measured; only after those foundations are stable should plant, aquaculture or human studies be interpreted.

The Path Through Part Four

QUALIFY THE ASSESSMENT	Chapter 18 Operator mediation, apparatus checks, repeatability and agreement
CONTROL THE COMPARISON	Chapter 19 Coding, blinding, sham controls, retention studies and analysis
STAGE THE PROGRAMME	Chapter 20 Water characterisation before plant, aquaculture and human translation
REPLICATE INDEPENDENTLY	Across Part Four Prespecified methods, complete reporting and external verification

A well-designed method does not promise a preferred answer. It must be able to produce and preserve positive, negative, mixed and null findings without changing the decision rules after identities are known.

How to Read This Part

Observation. A recorded movement or sample difference is the beginning of an investigation, not its conclusion.

Measurement. Each result must state what was observed, by whom, with which instrument, under which conditions and with what uncertainty.

Inference. Reliability, discrimination, independent correlation and replication answer different questions and must not be treated as interchangeable.

PART FOUR MEASUREMENT AND RESEARCH

CHAPTER 18

Operator Mediated Assessment and Measurement Science

Reader question *What does the Foundation's assessment method record and what are its limitations?*

Operator-Mediated Resonance Detection Apparatus, abbreviated OMRDA, is the Foundation's investigational apparatus used within its assessment procedure and is presented publicly as the Universal Aura Scanner. Its immediate observable is movement of an operator-held apparatus in relation to a nominated reference and target under a defined procedure. Because the operator's neuromuscular action forms part of the measurement system, scientific evaluation must study the apparatus, the operator, the target, the environment and the recording rule together. [1–6]

ASSIGNED REFERENCE	The nominated reference, vial, electronic source or protocol setting presented for the assessment.
APPARATUS CONFIGURATION	Device identity, paired handle and ferrite-oscillator arrangement, start geometry and any source or sample placement.
OBSERVED RESPONSE	The operator-mediated movement, direction and angular endpoint recorded under the stated rule, potentially extending to 180 degrees.
INDEPENDENT EVIDENCE	Any separately measured source signal, water property or biological outcome obtained with a recognised instrument or method.

Operational Definition

In the Foundation's procedure, the OMRDA is an operator-mediated resonance assessment apparatus with paired handles and dual ferrite-oscillator assemblies. The operator presents or selects a nominated reference, holds the apparatus in the stated position, and records the resulting movement and angular endpoint according to the protocol. Universal Aura Scanner is the apparatus name used by the Foundation; the name does not determine the physical measurand.

The Observable Endpoint

The reported deflection may extend to 180 degrees. This is an angular observation. Until a measurement model, reference standard and uncertainty are established, the angle cannot be interpreted as a calibrated amount of energy, radiation pressure, electromagnetic coupling, photon flux or biological function.

Patent Status and Scientific Validity

Patent protection addresses intellectual property and does not by itself establish accuracy, validity, mechanism, safety or clinical usefulness. Those questions require controlled studies and independent replication.

ASSESSMENT SYSTEM AND RELIABILITY CONTROLS

Treat the Operator and Apparatus as One Measurement System

An OMRDA record is created by an interaction among a reference or source, a coded target, the operator, the apparatus and the endpoint rule. The diagram identifies these observable parts without deciding why movement occurs. [1–6]

Assessment-system components

REFERENCE OR SOURCE	CODED TARGET	OPERATOR	OMRDA APPARATUS	RECORDED ENDPOINT
identity and setting log	water person plant or location	posture grip and handling	paired handles and ferrite assemblies	direction angle and decision

Reliability-study layout

PREPARE	CODE	RANDOMISE	ASSESS	ANALYSE
fixed sample panel	concealed identities	order and repeats	operators and sessions	agreement before decoding

Figure 17 Operator-mediated assessment and reliability controls

START	Defined initial handle orientation before presentation of the target
DIRECTION	Prespecified inward outward or other movement category
ANGLE	Observed angular endpoint recorded in degrees under a stated stopping rule
UP TO 180 DEGREES	Maximum reported span in the operating description, not a calibrated energy magnitude

The Angle Must Be Recorded Before Interpretation

Record the initial orientation, direction, endpoint, repetitions and no-response rule before assigning a category. A later interpretation such as adaptive, nonadaptive or within-band deficit must use a prespecified decision rule and retain the original angular record.

The Frequency Label Is a Separate Record

Within this book, 400–752 Hz inclusive is the proposed adaptive interval; below 400 Hz and above 752 Hz are proposed nonadaptive regions. These labels identify nominated protocol settings or operator-mediated classifications. They do not show that the target emits, stores or transfers the stated frequency.

HUMAN FACTORS AND STANDARD PROCEDURE

Operator Mediation Is a Testable Source of Variation

The operator supplies grip, posture and movement. Attention, fatigue, learning, expectation, cueing and unconscious motor activity may therefore influence the observed deflection. This possibility neither proves that every reading is artefactual nor validates the proposed resonance explanation. It defines variables that must be controlled and measured. [3–6]

SOURCE OF VARIATION	WHAT MAY VARY	CONTROL AND RECORD
POSTURE AND GRIP	stance, arm position, grip force, handle alignment and start geometry	mark foot position; standardise arm and handle placement; photograph or diagram the setup
MOVEMENT	speed, acceleration, tremor, range, stopping rule and conscious or unconscious motor contribution	train to one movement rule; video or angle-capture a validation subset
OPERATOR STATE	fatigue, discomfort, attention, practice, recent exertion and session duration	set rest periods and session limits; record deviations and operator-reported state
EXPECTATION AND CUES	knowledge of target, visible labels, sounds, facial reactions, sequence patterns and prior results	conceal codes; neutralise interaction; randomise order; separate observers
APPARATUS	device identity, symmetry, friction, damage, handle spacing, reference arrangement and drift	inspect before use; document serial or unit ID; use fixed geometry and checks
ENVIRONMENT	room, surface, temperature, air movement, nearby equipment, electromagnetic background and interruptions	use one logged setting; monitor planned variables; record every change

Use One Written Procedure

1 APPARATUS CHECK	Identify and inspect the OMRDA unit; confirm the intended configuration.
2 SOURCE RECORD	Record the reference or source identity and independently verify electronic output where applicable.
3 ROOM AND OPERATOR	Log the environment; use the stated operator preparation, posture, grip and rest procedure.
4 CODED PRESENTATION	Present concealed targets in a randomised order with neutral instructions and no feedback.
5 FIXED ASSESSMENT	Use the same start position, movement rule, distance, timing, repetitions and stopping rule.
6 CONTEMPORANEOUS RECORD	Record direction, angle, classification, time, uncertainty flags and deviations before the next trial.
7 DATA LOCK	Complete and lock the assessment file before codes are released.
8 ANALYSIS	Apply the prespecified reliability and discrimination analysis, including all valid null results.

Training Must Reduce Variation Without Teaching the Answer

Training should standardise safe handling, start position, movement, stopping and recording. It must not expose trainees to the expected identity of coded samples or reward agreement with a preferred classification. Competency should be checked on concealed practice panels with feedback withheld until records are complete.

Record No Response and Ambiguous Movement

The procedure needs explicit categories for no movement, unstable movement, apparatus contact, interrupted trials and operator discomfort. Excluding such trials only after identities are known creates bias.

APPARATUS AND SOURCE QUALIFICATION

Verify Each Check at the Level It Can Support

Qualification asks whether the apparatus and source operate as specified and whether the endpoint can be recorded consistently. It should precede water or biological claims. The result of one check must not be extended to a different part of the system. [3–6]

CHECK	WHAT IS DONE	WHAT IT DOES NOT ESTABLISH
DEVICE IDENTITY	Record model, unit identifier, configuration and service or repair history.	Does not establish detection validity.
PHYSICAL INSPECTION	Check symmetry, free movement, damage, looseness and repeatable start geometry.	Does not calibrate an energy scale.
ANGLE REFERENCE	Check angle-reading method with a physical geometry or video reference.	Qualifies the angular record only.
ELECTRONIC SOURCE	When used, verify source frequency, waveform and stated output using suitable electronic instruments.	Verifies the source at the test point, not the target or water.
INERT AND DUMMY CHECKS	Use concealed inert references, empty positions and repeated targets to probe bias and false positives.	A control is informative only when its identity is concealed.
STABILITY CHECK	Repeat checks across the session and after transport, repair or configuration change.	Drift must be reported; it cannot be corrected after seeing results.

Electronic Source Verification Has a Narrow Meaning

When a separate electronic source is used for frequency presentation, induction or an annulment comparison, an oscilloscope or frequency counter can verify frequency, waveform and stated electrical output at the measured point. This verifies the source. It does not demonstrate that water retained that setting, that the OMRDA detected it, or that a proposed interaction mechanism is correct.

Use Qualification Rather Than Unsupported Calibration

Calibration links an indication to defined quantity values and stated uncertainty through suitable references. Until the OMRDA measurand and reference chain are defined, source verification and angular checks should be reported as qualification, not calibration of water energy or a biological field. [3,4,6]

Preserve a Complete Session Record

SESSION	date, time, site, room and session identifier
OPERATOR	coded operator ID, training status, rest, symptoms, fatigue and declared conflicts
APPARATUS	unit ID, configuration, inspection, reference arrangement and source verification
TARGET	concealed code, container, position, distance, order and presentation duration
RESULT	direction, angle, classification, repetitions, no-response rule and confidence or uncertainty flag
CONTEXT	temperature, air movement, nearby equipment, interruptions and planned environmental readings
DEVIATION	what changed, when it occurred, who observed it and whether the trial remains analysable

RELIABILITY AND INTEROPERATOR AGREEMENT

Reliability Comes Before Interpretation

A method cannot support a stable classification if the recorded result changes unpredictably across immediate repeats, operators, sessions or sites. Reliability studies use concealed targets and fixed procedures to estimate that variation before asking whether the classification agrees with an independent outcome. [3–8]

PROPERTY	COMPARISON	QUESTION
REPEATABILITY	Same operator, apparatus, coded target and procedure in closely spaced repeats	How much does the recorded result vary under nearly unchanged conditions?
INTEROPERATOR AGREEMENT	Different operators assess the same concealed targets under one procedure	Do operators classify targets or record angles consistently?
STABILITY	The same checks are repeated across time, transport, service or environmental blocks	Does the measurement process drift?
DISCRIMINATION	Prespecified target, sham and inert conditions are compared while identities remain concealed	Does the method distinguish conditions better than its null expectation?
INDEPENDENT REPLICATION	A separate team implements the protocol with its own operators and analysis	Does the reported pattern extend beyond the originating team and site?

Separate the Roles That Can Reveal the Answer

PREPARATION	CODE CUSTODY	ASSESSMENT	DATA LOCK	ANALYSIS
make samples or conditions	hold allocation key	record concealed trials	freeze valid records	test plan then decode

The person who prepares or conditions samples should not assess them. Code custody should remain with someone who does not perform the assessment. The analysis file and exclusion decisions should be locked before the key is opened.

Choose the Agreement Statistic Before the Study

For categorical classifications, report the full cross-tabulation, percentage agreement and a prespecified chance-adjusted measure where appropriate. For angular or other continuous records, show individual observations, within-operator variation and between-operator agreement; an intraclass correlation or limits-of-agreement analysis may be suitable when its assumptions and purpose are met. A statistician should choose the method before decoding. [5,7]

Set Acceptance Rules in Advance

Specify the acceptable repeatability, agreement, missing-record rate and discrimination result before data collection. Do not select a favourable metric after seeing the codes. Report uncertainty, all prespecified comparisons and valid null results.

Reliability Is Necessary but Not Sufficient

Operators can agree consistently and still be consistently unrelated to the concealed target or independent measurement. Reliability describes consistency; validity asks whether the result supports the intended interpretation.

VALIDATION AND RESPONSIBLE INTERPRETATION

Build Evidence in a Defined Order

The first question is whether the operating procedure is consistent. The next is whether it distinguishes concealed conditions. Only then should researchers compare it with independent measurements, test physical mechanisms and seek replication outside the originating team. [3–8]

LEVEL	EVIDENCE QUESTION	REQUIREMENT
LEVEL 1	OPERATING CONSISTENCY	The apparatus setup and operator procedure produce sufficiently repeatable angular or categorical records under unchanged conditions.
LEVEL 2	BLINDED DISCRIMINATION	Prespecified coded target, sham and inert conditions are distinguished in new trials analysed before decoding.
LEVEL 3	INDEPENDENT CORRELATE	A suitable recognised instrument or biological method records a corresponding outcome without using the OMRDA result to define it.
LEVEL 4	MECHANISM TEST	A physical hypothesis makes quantitative predictions tested with dose, geometry, shielding, dummy and operator-free controls.
LEVEL 5	INDEPENDENT REPLICATION	A separate institution reproduces the protocol and interprets positive, mixed and null results under the same decision rules.

Every Reliability Outcome Is Informative

REPEATABLE AND DISCRIMINATING	Supports the defined procedure in the tested setting; independent correlation and replication remain necessary.
REPEATABLE BUT NOT DISCRIMINATING	The operator and apparatus may be consistent without distinguishing the concealed conditions.
VARIABLE BY OPERATOR OR SESSION	The recorded result is measurement-system dependent; protocol, training or method claims must be revised.
NULL OR CHANCE-COMPATIBLE	The prespecified study does not support discrimination under those conditions; report it without post hoc relabelling.

Mechanism Claims Require Independent Physics

Electromagnetic coupling, radiation pressure, photon interaction or another proposed mechanism may be framed as hypotheses. Established electromagnetic and photon equations cannot serve as borrowed proof. A mechanism claim requires independently detected signals, quantitative predictions and controls for geometry, shielding, dummy targets and operator-free operation.

PERMITTED	"Under the stated blinded procedure, the operator recorded a prespecified OMRDA deflection or classification for the coded target."
AVOID	"OMRDA directly detected photons," "the scanner measured water energy," "180 degrees proves a stronger field," or "patent status validates the scientific mechanism."

Reader takeaway. OMRDA operationally records an operator-mediated movement and angular endpoint in relation to a nominated reference and target. It is not yet a conventional water-quality instrument, spectrum analyser or direct photon detector, and it cannot by itself validate WERRH. Apparatus qualification, a fixed procedure, concealed targets, repeatability, inter-operator agreement, independent correlation and external replication must precede claims about a water response or physical mechanism.

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PART FOUR MEASUREMENT AND RESEARCH

CHAPTER 19

Controlled Experiments and Retention Studies

Reader question *What would make a water comparison credible and reproducible?*

A credible Water Energy Hygiene experiment begins with a common water batch, changes one prespecified condition, conceals sample identity and measures every arm under the same schedule. The method must be capable of finding a difference, no difference, an opposite pattern or a result that depends on the operator or measurement stream. [1–7]

Begin With One Question and One Common Batch

The source batch should be mixed or otherwise made as uniform as the protocol allows, characterised, divided into comparable aliquots and assigned by a recorded random schedule. Same-batch controls reduce starting variation; they do not replace replication with new batches on other runs or days.

ARM	WHAT IS DONE	QUESTION ANSWERED
SAME BATCH UNTREATED	Aliquot from the common source receives no intended active procedure but follows the same schedule.	Controls for starting water and ordinary time effects.
MATCHED SHAM	Handling, duration, container, room and apparatus are matched while the intended active input is absent.	Tests procedure, expectation and handling effects.
TARGET CONDITION	A prespecified proposed adaptive setting within 400–752 Hz inclusive is applied under the written protocol.	Tests the nominated condition, not the whole interval.
OFF TARGET	A different active setting is selected before allocation and applied with the same exposure geometry.	Tests whether any response is target specific.
DEFINED COMPARISON	A prespecified outside-band setting, conventional treatment or container condition is used when relevant.	Answers one named comparison question only.

Adaptive and Nonadaptive Labels Do Not Decide the Result

For investigational frequency comparisons, 400–752 Hz inclusive is the Foundation-defined proposed adaptive interval. Settings below 400 Hz and above 752 Hz are proposed nonadaptive classifications. These are protocol labels, not measured water emissions, biological limits, safety grades or prior evidence of benefit or harm.

CODED BLINDED SAME BATCH WORKFLOW

Hide Identity Without Losing Sample History

Coding protects the assessment from conscious and unconscious cues. Chain of custody protects the sample history. A study needs both: an anonymous vial with an incomplete history cannot support a reproducible comparison, and a complete history visible to the assessor does not provide blinding. [1,3,5–7]

STAGE	CONTROLLED ACTION	PRESERVED RECORD
1 REGISTER	Assign a batch ID and record source, collection, baseline aliquots, volume, container and time.	Complete batch record
2 RANDOMISE AND CODE	An independent custodian assigns neutral aliquot codes and conditions using a schedule made before exposure.	Allocation list and sealed key
3 APPLY	A designated conditioner receives only the instruction needed, follows it and records every exposure and deviation.	Exposure log
4 VERIFY AND TRANSFER	Coded sealed samples move to assessors under documented custody without revealing allocation.	Custody and transfer log
5 MEASURE	Blinded teams complete the conventional and operator-mediated schedules without feedback between streams.	Time-stamped results
6 LOCK AND DECODE	Valid records, exclusions and analysis code are frozen before the allocation key is released.	Locked dataset and audit trail

Figure 18 Coded blinded same-batch comparison workflow

Allocation Concealment Protects the Comparison

The randomisation schedule must exist before exposure and remain unavailable to assessors. The conditioner may need to know the assigned procedure, but should not assess the samples, communicate expected results or decide exclusions. The analyst should receive group names only after the data and analysis rules are locked.

CONDITIONER	CODE CUSTODIAN	ASSESSORS	ANALYST
knows only assigned procedure when necessary	holds allocation key and transfer log	receive neutral sample codes only	uses locked plan before decoding

Maintain an Unbroken Chain of Custody

IDENTITY	batch ID, aliquot ID, neutral code and code version
TRANSFER	from whom, to whom, date, time, seal status and purpose
CONDITION	container, volume, headspace, temperature, light, storage and transport
ACCESS	opening, sampling, probe insertion, mixing, loss, damage and unexpected contact
DEVIATION	event, time, observer, corrective action and prespecified disposition

EXPOSURE SPECIFICATION AND LOGS

A Frequency Number Is Not a Complete Exposure

A setting in hertz states repetition rate only. When applicable, the protocol must also document waveform, output, amplitude, duty cycle, duration, distance, orientation, coupling geometry and source stability. If a calibrated dose is not available, report an exposure specification rather than calling the setting a dose. [1–4]

ELEMENT	DETAIL TO DEFINE	EVIDENCE TO KEEP
QUESTION	one prespecified target condition and comparison	protocol ID and version
SOURCE	device or source identity, unit ID and configuration	qualification record
SETTING	frequency, waveform, output, amplitude or duty cycle when applicable	instrument reading and unit
GEOMETRY	distance, orientation, coupling arrangement and shielding	diagram or fixed coordinates
TIME	start, end, duration and exact zero time for follow-up	synchronised timestamps
WATER	batch, aliquot volume, baseline state, mixing and headspace	sample history
CONTAINER	material, size, closure, cleaning, lot and prior use	container record
ENVIRONMENT	room, temperature, light, nearby equipment, transport and interruptions	environment log

Verify the Source at the Point Actually Measured

An oscilloscope, frequency counter or other suitable instrument may confirm the output of an electronic source at a defined point. That check qualifies the source and record. It does not show that the water absorbed, retained, emitted or transferred the nominated frequency.

Change One Planned Factor

Target and control arms should share water, container type, volume, room, timing, transport and measurement schedule unless one of those factors is the question being tested. When several factors must vary, use a factorial design and analyse their interaction rather than attributing the combined difference to one preferred cause. [3]

Record What Happened Not Only What Was Intended

Preserve actual timestamps, instrument readings, room changes, power interruptions, container openings and departures from the procedure. A deviation is data about the study. Its treatment should follow the rule written before decoding.

PARALLEL MEASUREMENT STREAMS

Measure Recognised Water Properties Beside OMRDA

Conventional measurements and OMRDA answer different questions. They should use the same coded allocation and time points, but their records must remain separate until analysis. Agreement may strengthen a defined association; disagreement, measurement-only patterns and null results must also remain visible. [1,4,6,7]

STREAM	EXAMPLES	WHAT IT CAN SUPPORT
CONVENTIONAL CORE	temperature, pH, conductivity, total dissolved solids, oxidation-reduction potential and dissolved oxygen	Recognised properties at a stated time and method; not proof of a proposed frequency imprint.
TARGETED ANALYSIS	minerals, organics, microbiology, turbidity or suitable spectroscopy selected for the study question	A defined analytical difference when sensitivity, controls and uncertainty are adequate.
OMRDA STREAM	operator ID, apparatus ID, nominated reference, direction, angle, classification and repetitions	An operator-mediated response under that procedure; not a direct water emission or photon measure.
LATER BIOLOGICAL TEST	separate human, plant or aquaculture outcome with its own controls and safeguards	A pathway-specific outcome; it must not be used to define the earlier water response.

Choose Measures From the Hypothesis

A broad instrument list does not make a study stronger. Select variables that could plausibly respond to the stated exposure, define the expected direction only when justified, specify instrument sensitivity and uncertainty, and distinguish exploratory measures from the primary outcome.

BASELINE	Use separate matched aliquots when a test consumes, contaminates or materially changes the sample.
ORDER	Randomise or balance instrument order; record opening and probe times because some variables change rapidly.
BLINDING	Keep sample identities concealed from every assessor and laboratory that does not need the allocation.
QUALITY CONTROL	Use blanks, duplicates, standards and instrument checks appropriate to each recognised method.
RAW RECORD	Retain original instrument output, OMRDA angle records, timestamps, units, flags and all valid null readings.

Opening and Probing Can Change the Sample

Dissolved oxygen, oxidation-reduction potential, temperature and other measurements may shift with opening, stirring, headspace exchange or probe contact. Use separate sealed aliquots for destructive or intrusive tests when feasible, and balance measurement order across coded arms.

RETENTION AND DECAY TIME COURSE

Start the Clock When the Exposure Ends

A retention claim becomes meaningful only if an initial response is defined and shown to exceed the variation of matched controls. Zero time is the documented end of exposure. Every later comparison must preserve the same outcome, reference and decision rule. [1,4,6,7]

IMMEDIATE	1 HOUR	6 HOURS	24 HOURS	48 HOURS	7 DAYS
larger illustrative difference	difference may remain	difference may weaken	closer to reference	small or variable	no detected difference

Figure 19 Hypothetical response retention and decay timeline

Illustration only. The sequence is not experimental data, an expected curve or evidence that retention exists. A real result may persist, weaken, fluctuate, reverse or remain indistinguishable from controls.

CONTROL	PRESPECIFIED METHOD	WHY IT MATTERS
ZERO TIME	End of the defined exposure	Record exact clock time; do not use an approximate label.
TIME POINTS	Immediate, 1 h, 6 h, 24 h, 48 h and 7 d are illustrative	Choose intervals from the hypothesis and feasibility before allocation.
SAMPLE PLAN	A separately sealed aliquot for each arm and time point is preferred	Avoid repeated opening, evaporation, probe carryover and changing headspace.
STORAGE	Same temperature, light, position, transport and disturbance across arms	Log actual conditions continuously or at defined checks.
REFERENCE	Matched untreated and sham samples travel through every time point	Retention means a difference relative to concurrent controls.
OUTCOME	The same prespecified measure and decision rule at every time point	Do not switch outcomes because the expected pattern is absent.

Use Sealed Aliquots for Separate Time Points

Repeatedly opening one container produces dependent observations and changes its history. A stronger design prepares coded sealed aliquots for every arm and time point. Those aliquots still share their source batch and are not automatically independent experimental units. If repeated measures on one container are unavoidable, record each intervention and analyse the dependence.

A Time Trend Describes Pattern Not Mechanism

A reproducible decline would describe how a measured difference changes with time. It would not by itself establish water memory, identify a storage mechanism or show later transfer to a biological system.

STATISTICAL PLAN AND DECISION RULES

Write the Analysis Before the Codes Are Opened

The protocol should name the primary comparison, experimental unit, sample size basis, model, exclusions, missing-data rule, stopping rule and interpretation thresholds. A dated plan protects the study from choosing the most favourable outcome after identities are known. [3–6]

PLAN ITEM	DECISION BEFORE DATA	RISK CONTROLLED
PRIMARY QUESTION	Name one main comparison, outcome and time point.	Prevents selective emphasis after decoding.
EXPERIMENTAL UNIT	Define the smallest unit independently assigned to a condition.	Repeated readings from one container are not new independent units.
REPLICATION	Repeat independent batches, runs, days and operators as the question requires.	Separates technical precision from reproducibility.
SAMPLE SIZE	Use expected variation and a meaningful detectable difference; label pilots as pilots.	Avoids treating convenience numbers as conclusive.
MODEL	Prespecify group, time and group-by-time terms and account for repeated observations.	Tests the pattern actually posed by WERRH.
MULTIPLE TESTS	Name secondary outcomes and control or clearly report multiplicity.	Limits false-positive interpretation.
EXCLUSIONS	Define invalid trials, missing data, outliers and protocol deviations before decoding.	Prevents outcome-dependent removal.
STOPPING	Set completion, safety, futility and technical-failure rules in advance.	Prevents stopping when results first look favourable.

Do Not Turn Technical Repeats Into Sample Size

The experimental unit is the smallest unit independently assigned to a condition. If one exposure is applied to one container, ten readings from that container improve the estimate of that container but do not create ten independent exposure units. New batches and independent runs address reproducibility.

Estimate a Time Course as a Time Course

A retention analysis should compare groups across time and test the prespecified group-by-time pattern while accounting for repeated observations, batch and operator where relevant. Separate tests at every time point increase multiplicity and can create a selective story.

Keep Every Valid Outcome

Positive, negative, opposite, mixed and null findings are valid study outcomes. Report effect estimates, uncertainty, raw distributions, missing records and all prespecified comparisons. Do not replace a failed primary outcome with a favourable exploratory result.

INTERPRETATION AND REPLICATION

Ask Which Measurement Stream Contains the Difference

A study can find an independently measured water difference, an operator-mediated OMRDA difference, both or neither. These patterns support different statements. Combining them into one positive or negative label would hide the most useful information. [1,3–6]

INDEPENDENT WATER MEASURE	NO REPEATABLE OMRDA DIFFERENCE	REPEATABLE OMRDA DIFFERENCE
NO DIFFERENCE	Null under the tested methods and conditions. Report the uncertainty and detection limits.	Operator- or procedure-associated finding only; it does not establish that the water changed.
REPEATABLE DIFFERENCE	An independently measured water difference that the OMRDA did not track under this procedure.	Convergent evidence for a sample difference and operator-mediated classification; mechanism and retention remain separate tests.

Replication Must Recreate the Decision Rules

INTERNAL REPEAT	New coded aliquots and independent batches under the frozen procedure
INDEPENDENT TEAM	A separate group receives the protocol, materials specification and analysis plan before data
INDEPENDENT METHOD	A suitable recognised analytical method tests the sample without using OMRDA to define the answer
COMPLETE REPORT	Methods, deviations, all prespecified outcomes, uncertainty, raw records and code are preserved

The second team should know the apparatus and operating procedure but not the earlier sample identities or trial-level answers. Any necessary clarification, protocol change or failed qualification check should be dated and reported before the new codes are opened.

Reader takeaway. A credible retention study begins with same-batch randomised comparisons, concealed codes, complete exposure and custody records, parallel conventional and operator-mediated measurements, predefined time points and a locked statistical plan. WERRH is supported only to the extent that prespecified results are reproducible. OMRDA alone cannot establish a change in water, retention, mechanism or biological transfer.

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PART FOUR MEASUREMENT AND RESEARCH

CHAPTER 20

The Staged Water Energy Hygiene Research Programme

Reader question *In what order should the Foundation and collaborators test the WEH questions?*

The programme begins by asking whether the measurements are reliable and whether coded water comparisons can be reproduced. Plant, aquaculture and human studies follow only when the evidence, safety and ethics requirements for the next stage are met. A positive exploratory result is not, by itself, permission to advance. [1–8]

One Programme With Seven Work Packages

Chapter 19 defined how to compare, blind, measure and replicate. Chapter 20 places that method inside a programme with seven work packages, abbreviated WP1 to WP7. Each package has a bounded question, a written protocol and a decision gate. The gate can advance, repeat, refine, stop or redirect the work.

PROGRAMME LAYER	WORK PACKAGE	ROLE IN THE SEQUENCE
LABORATORY FOUNDATION	WP1 to WP3	Qualify the method, test water response and retention, then compare treatment, storage, containers and environment.
PLANT PATHWAY	WP4	Test adaptive-frequency-conditioned irrigation water, abbreviated AFCIW, with independent plant and water outcomes.
AQUACULTURE PATHWAY	WP5	Test coded water conditions with water quality, aquatic animal welfare, production and food-safety measures.
HUMAN PATHWAY	WP6	Begin ethics-approved direct-intake pilots only after the required scientific and safety gates are met.
INDEPENDENT CONFIRMATION	WP7	Repeat the frozen methods across independent teams and sites, then report every valid outcome.

The Classification Does Not Predetermine the Evidence

The proposed adaptive interval of 400–752 Hz inclusive and the proposed nonadaptive ranges below 400 Hz and above 752 Hz are Foundation-defined operational classifications. They are not measured water emissions, biological limits, safety grades or proof of benefit or harm. WERRH remains a testable hypothesis, and OMRDA remains an operator-mediated investigational method.

PROGRAMME PATHWAY

Progression Requires Evidence at Every Stage

A staged programme prevents a laboratory observation from becoming a biological, food or human claim without the necessary intermediate evidence. Progression criteria are written before results are known and are reviewed with the full record, including deviations and null findings.

STAGE	WORK PACKAGE	DECISION GATE
WP1	MEASUREMENT SCIENCE	Gate 1 Reliability and method qualification
WP2	EXPOSURE RESPONSE RETENTION	Gate 2 Reproducible coded water comparison
WP3	TREATMENT STORAGE CONTAINER	Gate 3 Controlled comparison survives confounder checks
WP4	PLANT AND AFCIW	Gate 4 Repeatable plant outcome with acceptable agronomy
WP5	CONTROLLED AQUACULTURE	Gate 5 Welfare and water-quality criteria met
WP6	DIRECT INTAKE HUMAN PILOT	Gate 6 Ethics, safety and prespecified pilot decision
WP7	INDEPENDENT REPLICATION	Gate 7 Multicentre evidence and complete reporting

Figure 20 Seven work packages and decision gates

Each Gate Requires a Documented Decision

The gate asks whether the next study is scientifically justified, technically feasible, ethically acceptable and safe. A result may be interesting yet too uncertain to advance. Conversely, a well-designed null result can narrow the hypothesis and prevent unnecessary biological or human work.

ADVANCE	Every mandatory scientific, quality, safety and ethics criterion is met.
REPEAT	The method is adequate, but precision or replication is insufficient for a decision.
REFINE	A correctable method, apparatus, operator, sample or analysis problem is identified.
STOP OR REDIRECT	Safety, ethics, feasibility or repeated null evidence makes the planned next stage unjustified.

Conventional Safeguards Continue Through Every Package

Conventional water quality, treatment, food safety, aquaculture standards, animal welfare, research ethics and medical boundaries are not displaced by Water Energy Hygiene measurements. They remain primary requirements before any investigational result is interpreted.

DECISION GATES AND PROGRESSION CRITERIA

Define the Evidence Needed Before Work Begins

The table converts the programme into seven auditable decisions. Each row identifies the question, minimum evidence and permitted next action. Exact numerical thresholds belong in the study protocol and must reflect the method, expected variation, practical importance and applicable safety or ethics requirements.

WP	WHAT IS TESTED	MINIMUM PROGRESSION CRITERIA	GATE DECISION
WP1	Operator and apparatus reliability with coded standards, sham trials and conventional characterisation.	Prespecified repeatability, inter-operator agreement, blinding integrity, uncertainty and method records are adequate.	Qualify; otherwise refine or stop the method.
WP2	Whether a defined exposure is followed by a measurable response, retention or decay against matched controls.	The primary comparison and time course reproduce across independent batches without outcome-dependent exclusions.	Advance, repeat or reject the tested form of WERRH.
WP3	Treatment, storage, container and environmental factors under controlled conditions.	The named factor remains distinguishable after water chemistry, microbiology, handling and environmental confounders are checked.	Select reproducible conditions for biological testing.
WP4	Water-to-plant and AFCIW outcomes with agronomic and plant measurements.	A repeatable plant outcome occurs without unacceptable water, soil, crop-health or food-safety findings.	Replicate or refine before broader crop trials.
WP5	Water-to-aquaculture outcomes with conventional water-quality and production measures.	Animal welfare, survival and water-quality criteria are met and any production difference repeats independently.	Replicate or stop before food-pathway claims.
WP6	A small ethics-approved direct-intake human study using potable water and prespecified outcomes.	Prior evidence justifies exposure; approval, consent, registration, safety monitoring and the pilot decision rule are complete.	Plan confirmation, refine or stop without therapeutic claims.
WP7	Independent and multicentre replication of frozen protocols, followed by peer review and publication.	Methods, data, deviations and all prespecified outcomes are sufficiently complete for independent evaluation.	Support, modify or reject each tested proposition.

Table 12 Work packages decision gates and progression criteria

One Strong Result Cannot Offset a Failed Requirement

Strong performance in one domain cannot cancel failure in another. A repeatable OMRDA classification does not replace water-safety evidence. A favourable growth outcome does not cancel poor animal welfare. An ethics approval does not repair a scientifically weak human protocol.

Record the Decision and Its Reason

For every gate, preserve the reviewed dataset, deviations, analysis, uncertainty, safety record, reviewer roles, conflicts and dated decision. A changed criterion creates a new protocol version and cannot be applied silently after the result is known.

EVIDENCE PACK	frozen protocol, locked dataset, quality checks, deviations, uncertainty and applicable safety or ethics record
REVIEW ROLES	named scientific, measurement, statistical, safety or ethics reviewers appropriate to the stage
CRITERIA RESULT	each prespecified progression criterion recorded as met, not met or not assessable, with the supporting record
DATED DECISION	advance, repeat, refine, stop or redirect, together with the reason, responsible body and next protocol version

LABORATORY FOUNDATION WP1 TO WP3

WP1 Qualifies the Measurement System

WP1 tests whether the apparatus, operators, coding and recording process are sufficiently reliable for the intended question. OMRDA is assessed as an operator-mediated response system. It is not treated as a conventional water-quality instrument, a direct photon detector or independent proof that water changed. [1,3,4,7]

APPARATUS	Identify every device, reference source, calibration or qualification check, software version and operating range.
OPERATORS	Train to one written procedure; assess within-operator repeatability and between-operator agreement under coding.
BLINDING	Use neutral codes, sham and off-target trials, concealed allocation and separated conditioning, assessment and analysis roles.
WATER RECORD	Measure conventional properties and preserve source, batch, container, temperature, storage and chain of custody.
DECISION	Set reliability, uncertainty, invalid-trial and stopping thresholds before the codes are opened.

WP2 Tests Exposure Response Retention and Decay

WP2 uses coded same-batch arms to test whether a defined exposure is followed by a prespecified difference and whether that difference changes over time. It must permit support, modification or rejection of the tested form of the Water Exposure Response and Retention Hypothesis, or WERRH. A time course does not establish water memory or a storage mechanism.

WP3 Separates Real World Water Factors

WP3 compares one named factor at a time: treatment, storage duration, container material, light, temperature, transport or another recorded environmental condition. For example, selected ultraviolet-treated samples may be compared without implying that ultraviolet disinfection is generally harmful. Conventional disinfection and water-safety performance remain essential.

STUDY	CONTROLLED COMPARISON	DECISION EVIDENCE
WP2 RESPONSE	Coded same-batch untreated, sham, target and off-target samples	Immediate primary outcome relative to concurrent controls
WP2 RETENTION	Separate sealed aliquots at predefined time points	Prespecified group-by-time pattern, uncertainty and decay estimate
WP3 TREATMENT	Filtration, disinfection or another named process	Difference attributable to that process after conventional safety checks
WP3 STORAGE	Container material, closure, duration, temperature, light and transport	Repeatable factor-specific result rather than a bundled comparison
WP3 ENVIRONMENT	One recorded environmental condition at a time or a planned factorial design	Effect and interaction estimates with confounders controlled

BIOLOGICAL PATHWAYS WP4 AND WP5

WP4 Tests Water to Plant and AFCIW

WP4 studies the indirect pathway water to plant to food to human. Adaptive-frequency-conditioned irrigation water, abbreviated AFCIW, is compared with matched controls under a defined crop system. Water and OMRDA records remain separate from germination, physiology, yield and food-quality outcomes. [1–3]

DOMAIN	PRESPECIFIED RECORD OR OUTCOME	EVIDENCE ROLE
WATER	coded condition, conventional quality, volume, timing and retention interval	AFCIW exposure record
PLANT	germination, establishment, physiology, growth, yield and quality selected before study	Independent biological outcomes
SYSTEM	soil or medium, cultivar, nutrition, pest management, climate and irrigation uniformity	Agronomic confounder control
OMRDA	coded operator-mediated water or plant assessment in a separate stream	Investigational association only
GATE	repeat across blocks, batches, seasons or sites as the question requires	Basis to replicate or refine

WP5 Tests Water to Aquaculture and Aquatic Food

WP5 studies the pathway water to aquaculture to aquatic food to human. The experimental unit may be a tank or another independently assigned culture unit, not each fish measured within one shared tank. Water quality and welfare criteria must be satisfied before production differences are considered. Reporting should follow applicable animal-research standards. [5]

DOMAIN	PRESPECIFIED RECORD OR OUTCOME	EVIDENCE ROLE
WATER QUALITY	temperature, dissolved oxygen, pH, salinity where relevant, ammonia, nitrite and other species-appropriate variables	Safety and confounder control
ANIMAL WELFARE	approved species, stocking, behaviour, morbidity, mortality, humane endpoints and veterinary or ethics oversight	Non-negotiable welfare gate
PRODUCTION	growth, survival, feed use and other predefined aquaculture outcomes	Biological and operational effect
FOOD PATHWAY	harvest quality and applicable contaminant, residue, microbiological and traceability checks	Required before any food-to-human interpretation
REPLICATION	independent tanks or units, repeated cohorts and allocation at the correct experimental-unit level	Protection against tank-level pseudoreplication

Biological Output Does Not Prove Human Benefit

A repeatable plant or aquaculture output can support a pathway-specific biological association. It does not establish that the food benefits a person, identify a mechanism or justify a health claim. Food composition, contaminants, residues, microbiology, traceability and later human research remain separate gates.

HUMAN TRANSLATION WP6

Direct Intake Begins Only After the Required Gates

WP6 is a small, ethics-approved research pilot, not a wellness service or therapeutic trial by default. The direct pathway is water to human, so the protocol must justify the intake condition, use potable water and distinguish conventional outcomes from the separate investigational OMRDA stream. Earlier positive observations are background, not proof. [1,3,6]

SCIENTIFIC	Earlier methods and relevant water comparisons are reproducible enough to justify the human question.
WATER SAFETY	Every intake sample meets applicable potable-water, microbiological, chemical, storage and handling requirements.
ETHICS	An independent research ethics committee approves the protocol before recruitment; national and local requirements are followed.
REGISTRATION	The study, primary outcome, analysis and stopping rules are registered before the first participant is recruited.
CONSENT	Participants receive plain-language information, provide voluntary documented consent and may withdraw without penalty.
SAFETY	Qualified investigators monitor adverse events, privacy, burden, protocol deviations and stopping criteria.

Use the Smallest Study That Can Answer the Pilot Question

A randomised coded design may compare matched water conditions while controlling intake volume, temperature, timing, food, activity and baseline hydration. The protocol must define the experimental unit, washout or carryover controls when relevant, primary outcome, safety measures, exclusions, analysis and stopping rules before recruitment.

STREAM	PRESPECIFIED CONTENT	ROLE
PRIMARY OUTCOME	One prespecified conventional hydration or physiological measure appropriate to the study question	Answers the pilot question
SAFETY OUTCOMES	Adverse events, tolerability and clinically relevant monitored variables	Protects participants and informs stopping
OMRDA OUTCOME	Separately recorded coded operator-mediated response	Exploratory investigational stream
INTERPRETATION	Effect estimate, uncertainty, adherence, missing data and every prespecified result	Supports a bounded pilot conclusion

Human Rights and Safety Take Priority

Independent ethics review, voluntary informed consent, privacy, qualified supervision and continuing risk assessment are mandatory. Recruitment must stop or the protocol must change when participant protection requires it. No WEH classification replaces medical assessment, treatment or public-health advice. [6]

INDEPENDENT REPLICATION AND REPORTING WP7

The Final Work Package Tests Independence

WP7 asks whether qualified teams and sites can reproduce a prespecified result without relying on the originating team's expectations or unpublished trial-level answers.

Replication should preserve the core protocol while recording justified adaptations, local conditions and site effects. [4,7]

LEVEL	MINIMUM ACTION	QUESTION ANSWERED
INTERNAL REPEAT	New codes, batches and runs under the frozen procedure	Estimates stability within the originating team
INDEPENDENT TEAM	Protocol and materials specification transferred without trial-level answers	Tests whether the result depends on the original team
MULTICENTRE	Harmonised core protocol at more than one qualified site	Tests transportability and site variation
PEER REVIEW	Methods, analysis, uncertainty and limitations examined externally	Improves scrutiny: it does not make a claim automatically true
PUBLIC RECORD	Protocols, deviations, valid null results, data access terms and conflicts reported	Makes support, modification or rejection traceable

Preserve One Evidence Register Across the Programme

PROTOCOL	version, hypotheses, outcomes, units, sample-size basis, analysis and gate criteria
OPERATIONS	sample codes, custody, exposure, conventional water data, calibration and environmental logs
RESULTS	raw records, exclusions, missing data, effect estimates, uncertainty and all valid null findings
GOVERNANCE	ethics, animal welfare, safety, deviations, conflicts, authorship and publication decisions

The register should link every publication and public statement to the exact protocol version and evidence stage. Positive, negative, mixed, opposite and null findings remain part of the record. Peer review improves scrutiny but does not remove the need for independent replication.

Reader takeaway. The staged WEH research programme moves from measurement qualification to controlled water studies, plant and aquaculture pathways, carefully governed direct-intake pilots and independent replication. Every transition depends on criteria written before results are known. The programme must be able to support, modify or reject WERRH and its related propositions.

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PART FIVE RESPONSIBLE UNDERSTANDING AND COLLABORATION
CHAPTER 21

Interpreting Positive Negative Mixed and Null Results

Reader question *How should readers and investigators respond when studies do not produce one simple answer?*

A research result has meaning only in relation to the question, controls, measurement capability, uncertainty and conditions tested. A positive finding is not automatic validation, and nonconfirmation is not a failed study. Both can improve the Water Energy Hygiene hypothesis system when they are reported completely. [1–7]

Use Result Terms Precisely

The word negative is often ambiguous. It may mean no detected difference, a difference opposite to the prediction or an unusable study. This chapter separates null, opposite and inconclusive outcomes so that each leads to the correct interpretation and next action.

RESULT TERM	OPERATIONAL MEANING	MINIMUM REPORT
POSITIVE	The prespecified comparison differs in the predicted direction under the stated method.	Describe effect size, uncertainty, controls and replication status.
OPPOSITE	The comparison differs reproducibly in a direction contrary to the prediction.	Reconsider the directional hypothesis, coding and alternative causes.
MIXED	Results vary across operators, samples, settings, time points, outcomes or sites.	Locate the source of variation before combining or generalising.
NULL	The study does not detect the prespecified difference with the tested method and precision.	Report uncertainty, detection capability and the tested conditions.
INCONCLUSIVE	Design, execution, missing data, imprecision or protocol failure prevents a sound decision.	Do not label the finding positive or null; repair the study question or method.

Interpret Findings at the Planned Decision Gate

QUESTION	Was the primary comparison and decision rule written before decoding?
QUALITY	Were blinding, controls, apparatus, water records, exclusions and protocol deviations acceptable?
ESTIMATE	What difference was observed, how uncertain is it and what range of effects remains compatible with the data?
REPLICATION	Did the pattern repeat across new batches, operators, runs, methods or sites as required?
DECISION	Do the predefined criteria support advance, repeat, refine, stop or redirect?

Investigational Labels Do Not Decide the Result

The proposed adaptive interval of 400–752 Hz inclusive and the proposed nonadaptive ranges below 400 Hz and above 752 Hz are Foundation-defined classifications. WERRH remains investigational, and OMRDA is an operator-mediated procedure rather than a direct photon detector or conventional water-quality test.

OUTCOME INTERPRETATION MATRIX

Match the Statement to the Observed Pattern

The strongest responsible statement is the narrowest statement supported by the prespecified evidence. The matrix below separates replicated convergence, OMRDA-only findings, mixed patterns, opposite findings and null results. It does not rank inconvenient results below preferred ones.

OBSERVED PATTERN	WHAT WAS FOUND	SUPPORTED INTERPRETATION	NEXT GATE ACTION
REPLICATED POSITIVE WITH INDEPENDENT CORRELATE	The prespecified difference repeats and a recognised independent measure changes consistently.	Bounded evidence for a reproducible association under the tested conditions.	Advance only if the gate criteria are met; continue mechanism and pathway tests.
REPEATABLE OMRDA POSITIVE WITHOUT CORRELATE	The operator-mediated classification repeats, but conventional or independent measures do not show a corresponding difference.	A method-dependent or operator-associated finding requiring further controls.	Repeat blinded reliability work; test expectancy, coding, apparatus and sensitivity.
MIXED	Direction or magnitude differs by operator, sample, setting, time point, outcome or site.	Possible heterogeneity, instability, interaction, confounding or insufficient precision.	Stratify prespecified factors, check protocol fidelity and repeat the uncertain component.
OPPOSITE	A credible result runs contrary to the stated directional prediction.	Evidence against the predicted direction under the tested conditions.	Verify coding and analysis; then revise or reject the directional proposition.
NULL	No prespecified difference is detected relative to matched controls.	Nonconfirmation within the method, sample, precision, timing and conditions tested.	Use uncertainty and sensitivity to decide whether to stop, refine or repeat.

Figure 21 Interpretation of positive negative mixed and null outcomes

One Study Can Produce Several Valid Outcomes

A coded comparison may be positive in one stream and null in another. A water property, OMRDA response and biological outcome answer different questions. They should be reported separately before their agreement or disagreement is interpreted.

STREAM	EVIDENCE RECORDED	QUESTION ANSWERED
WATER STREAM	Recognised physicochemical, microbiological or targeted analytical measurements	Whether a defined property differs within the method's sensitivity and uncertainty
OMRDA STREAM	Coded operator-mediated classifications, angles, repetitions and reliability data	Whether the operator-apparatus procedure records a repeatable response
BIOLOGICAL STREAM	Plant, aquaculture or human outcomes collected under a separate pathway protocol	Whether a pathway-specific biological outcome differs under controlled exposure

Report Estimates and Uncertainty

A threshold or p value alone does not show the size, practical importance or cause of a difference. Report the effect estimate, uncertainty interval, raw distribution, missing data, deviations and sensitivity of the method. [4–7]

POSITIVE FINDINGS AND INDEPENDENT CORRELATES

A Positive Finding Must Remain Bounded

A prespecified positive result supports an association under the tested method, sample, setting and time point. Replication across new experimental units increases confidence that the pattern is not a chance feature of one run. Convergence with a suitable independent measure strengthens the evidence that a sample difference exists. Neither step identifies a mechanism automatically. [2–7]

INDEPENDENT WATER OR BIOLOGICAL MEASURE	NO REPEATABLE OMRDA DIFFERENCE	REPEATABLE OMRDA DIFFERENCE
NO REPEATABLE DIFFERENCE	Null across both streams under the tested conditions. Report sensitivity and uncertainty.	OMRDA-only finding. Investigate operator, expectancy, coding, apparatus, target definition and independent-method sensitivity.
REPEATABLE DIFFERENCE	Independent difference not tracked by OMRDA. Reassess whether the proposed classification should predict that measure.	Convergent association. Replication strengthens the bounded finding; mechanism and wider transfer remain separate questions.

An OMRDA Only Positive Requires Method Testing

A repeatable operator-mediated result without an independent correlate should be described as an OMRDA finding under the specified procedure. It does not establish that water absorbed, retained or emitted the nominated frequency. The next study should test operator effects, cueing, target definitions, apparatus behaviour and the sensitivity of the independent method.

SAME SAMPLE	Repeated readings estimate measurement precision for that sample; they are not new independent evidence.
NEW BATCH OR RUN	Independent preparation and allocation test whether the result survives ordinary procedural variation.
NEW OPERATOR OR TEAM	A concealed transfer tests whether the result depends on the originating assessor or group.
INDEPENDENT METHOD	A suitable recognised method tests whether another measurement stream converges on the same sample difference.
NEW SITE	A harmonised core protocol tests transportability and identifies site-related variation.

Positive Direction Does Not Mean Beneficial

A larger measurement, higher yield or changed physiological variable is not inherently favourable. Benefit, harm, safety and practical importance require outcomes and thresholds appropriate to that pathway. A plant or aquaculture result cannot establish a human effect, and a direct-intake result cannot be transferred to all water sources or populations.

MIXED OPPOSITE AND NULL OUTCOMES

Mixed Results Need Structured Analysis

Mixed findings may show real variation, unstable measurement, an interaction or insufficient precision. Do not hide them by averaging across incompatible operators, batches, settings, time points or sites. Analyse the factors specified in the protocol and label any unplanned subgroup work as exploratory.

SOURCE OF VARIATION	QUESTION TO ASK	APPROPRIATE RESPONSE
OPERATOR	Does the pattern change by operator, sequence, fatigue, expectation or feedback?	Analyse operator effects and preserve blinding.
SAMPLE	Do batches differ in source, chemistry, microbiology, container, age or handling?	Stratify by batch and repeat with new matched samples.
SETTING	Is a response limited to one target, off-target, waveform, duration or geometry?	Test the interaction rather than averaging it away.
TIME	Does the difference appear immediately, decay, fluctuate, reverse or emerge later?	Use the predefined time-course model and concurrent controls.
SITE OR METHOD	Does the result depend on one room, apparatus, laboratory or outcome method?	Check qualification, environment and transfer fidelity.

Opposite Results Test the Directional Prediction

A credible opposite result is evidence against the predicted direction under the tested conditions. First verify allocation, coding, units, signs and analysis. If the result repeats, revise or reject the directional proposition rather than relabelling the outcome after the event.

A Null Result Defines What Was Not Detected

A null result does not prove that every possible effect is absent. It states that the prespecified difference was not detected with the sample size, method, sensitivity, timing and conditions used. A precise null can challenge a meaningful effect; an imprecise null may justify a better-powered repeat if the question remains important.

LEVEL	EVIDENCE STAGE	WHAT IT ADDS
1	EXPLORATORY SIGNAL	Generates a question
2	INTERNAL REPEAT	Tests procedural stability
3	INDEPENDENT REPLICATION	Tests team and site independence
4	CONVERGENT MEASURE	Links separate evidence streams
5	PATHWAY SPECIFIC EVIDENCE	Supports only the tested plant aquaculture or human pathway

Evidence Supports Only the Proposition Tested

Each level strengthens only the proposition actually tested. Independent replication of an OMRDA classification does not establish water memory, mechanism, safety, biological transfer or human benefit unless those questions are tested separately.

ALTERNATIVE EXPLANATIONS AND REVISION

Test Competing Explanations

The same observed pattern can arise from different causes. Interpretation improves when the protocol identifies credible alternatives and includes controls that can distinguish them. An explanation should not be selected merely because it fits the preferred theory after results are known.

EXPLANATION	WHAT COULD PRODUCE THE PATTERN	CONTROL OR CHECK
PHYSICOCHEMICAL CHANGE	temperature, gases, ions, pH, oxidation-reduction state, dissolved or suspended material	Measure the relevant properties with stated uncertainty.
SAMPLE HISTORY	source variation, container, opening, mixing, storage, transport, evaporation or contamination	Use same-batch controls and complete custody records.
ENVIRONMENT	light, temperature, nearby equipment, vibration, electromagnetic conditions or timing	Record and control the named environmental factor.
EXPECTANCY OR CUEING	visible allocation, interaction, feedback, sequence learning or analyst knowledge	Separate roles, conceal codes and lock analysis before decoding.
METHOD VARIATION	apparatus drift, operator variation, calibration, sensitivity, specificity or data-processing choices	Run qualification, controls and independent-method checks.
RANDOM OR SELECTIVE PATTERN	chance variation, multiple comparisons, exclusions, early stopping or selective reporting	Use a prespecified plan and report every valid outcome.

Let Evidence Change the Hypothesis and Protocol

SUPPORT	Retain the bounded proposition and proceed only through the predefined gate.
NARROW	Limit the claim to the operator, sample, setting, time point, measure or pathway that reproduced.
REFINE	Revise the apparatus, procedure, control, terminology, outcome or analysis and issue a new protocol version.
REJECT	State that the tested proposition or predicted direction was not supported and remove it from later claims.

Terms should also change when evidence changes. A pattern limited to one operator or apparatus should not retain language that implies a property of water. A finding confined to one plant, aquaculture or direct-intake pathway should remain pathway specific.

Reader takeaway. A credible WEH research programme gives equal attention to replicated positive, opposite, mixed, null and inconclusive outcomes. It reports uncertainty, separates evidence streams, tests alternative explanations and allows every proposition to be supported, narrowed, refined or rejected. Nonconfirmation is useful evidence; an exploratory association is not validation.

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PART FIVE RESPONSIBLE UNDERSTANDING AND COLLABORATION

CHAPTER 22

Public Awareness Institutional Collaboration and Responsible Translation

Reader question *How can the concept be discussed publicly while serious testing proceeds?*

Public awareness and research can proceed together when every statement identifies its evidence level, preserves conventional safety and directs unanswered questions toward controlled study. Families and practitioners need plain boundaries. Institutions need testable propositions, reliable records and freedom to report any credible outcome. [1–9]

Public Awareness Begins with Complete Water History

Water should not be described only by an investigational reading. Its source, recognised quality, treatment, distribution, storage, container, environment and use pathway can all change the question. Awareness begins by recovering that history before interpreting a result.

STAGE	WHAT TO IDENTIFY	WHAT TO RECORD
SOURCE	Rain surface water groundwater or another identified source	Location season geology catchment and baseline quality
TREATMENT	Filtration disinfection mineral adjustment or another necessary process	Method settings performance records and applicable safety standard
DISTRIBUTION AND STORAGE	Pipes tanks containers closures transport temperature and time	Material handling duration environmental exposure and chain of custody
USE PATHWAY	Direct intake irrigation food processing or aquaculture	Keep human plant food and aquatic food routes separate
OUTCOME	Recognised quality measures OMRDA records and pathway outcomes	Interpret each evidence stream within its method and uncertainty

Keep Evidence Levels Visible

ESTABLISHED KNOWLEDGE	Recognised water quality physiology agriculture aquaculture food safety or measurement science
FOUNDATION OBSERVATION	A dated observation made under a stated Aura Research Foundation procedure and its known limits
INVESTIGATIONAL HYPOTHESIS	A proposition designed for controlled testing that may be supported modified or rejected

Safety Remains the First Public Message

Recognised chemical microbiological radiological and physical safety requirements remain primary. Necessary filtration or disinfection should not be delayed or stopped because of a proposed adaptive or nonadaptive classification. An OMRDA response does not certify potability and cannot replace accredited testing or public health guidance. [4]

INSTITUTIONAL COLLABORATION

Match Each Question to the Expertise It Needs

No single discipline can test the whole Water Energy Hygiene pathway. Collaboration should begin with the defined work package and evidence need, then bring together the expertise required to answer that question. The originating team contributes definitions, apparatus access and procedural training; independent partners must retain control of coding, analysis and interpretation where independence is being tested.

WORK PACKAGE	EVIDENCE NEED	COLLABORATING EXPERTISE	SHARED OUTPUT
WP1 MEASUREMENT SCIENCE	Reliability of operator apparatus coding and records	Metrology biophysics human factors and statistics	Qualified method with stated uncertainty
WP2 EXPOSURE RESPONSE RETENTION	Coded water comparison and time course	Water science physical chemistry spectroscopy and statistics	Reproducible result or a bounded null
WP3 TREATMENT STORAGE CONTAINER	Effect of one real world water factor at a time	Analytical chemistry microbiology materials and water engineering	Factor specific result after safety checks
WP4 PLANT AND AFCIW	Water to plant to food pathway	Soil science plant physiology agronomy and food science	Independent plant and crop quality outcomes
WP5 CONTROLLED AQUACULTURE	Water to aquatic food pathway	Aquaculture water quality animal welfare and food safety	Tank level welfare production and safety evidence
WP6 DIRECT INTAKE HUMAN PILOT	Ethics approved potable water study	Physiology clinical research ethics and biostatistics	Safety and prespecified human pilot outcomes
WP7 INDEPENDENT REPLICATION	Transfer to new teams methods and sites	Independent laboratories data science and peer review	Complete multicentre evidence record

Figure 22 Research collaboration map

Agree on the Work Before Results Are Known

QUESTION	State the testable proposition outcome pathway and decision gate before work begins.
ROLES	Name the originating independent laboratory statistical ethics and communication responsibilities.
METHOD	Freeze sample handling controls blinding apparatus qualification and analysis before decoding.
DATA	Define custody access privacy retention metadata and the shareable research record.
IP	Identify protected components and the information independent teams need to test the claim.
REPORTING	Commit to deviations uncertainty conflicts and every valid positive mixed opposite or null result.

Independence Must Be Designed

A university name does not by itself make a study independent. Independence depends on who controls allocation codes, sample custody, outcome measurement, analysis and publication. The agreement should protect the right to report positive, opposite, mixed, null and inconclusive results. [2,3,6]

RESPONSIBLE PUBLIC LANGUAGE

Translate the Evidence Without Expanding It

Responsible translation changes technical language into clear public language while preserving the original limits. The proposed adaptive interval of 400–752 Hz inclusive and the proposed nonadaptive ranges below 400 Hz and above 752 Hz remain Foundation-defined operator-mediated classifications. They are not established biological limits or direct measurements of water emissions.

TOPIC	PERMITTED WORDING	WORDING TO AVOID
FRAMEWORK STATUS	Water Energy Hygiene is an investigational component within Lifestyle Energy Hygiene	Water Energy Hygiene is an established new science
OPERATIONAL RANGE	The Foundation defines 400–752 Hz inclusive as proposed adaptive and below 400 or above 752 Hz as proposed nonadaptive	Science has proved a universally beneficial frequency band
OMRDA FINDING	OMRDA recorded an operator mediated response under the stated procedure	The apparatus directly detected photons or proved that water emitted the nominated frequency
FOUNDATION OBSERVATION	The Foundation observed a pattern that warrants controlled replication	The observation validates WERRH or proves water memory
PLANT OR AQUACULTURE	A pathway specific result may justify further controlled study	Conditioned water improves crops fish food quality or human health
DIRECT INTAKE	Any human study requires potable water ethics review consent and prespecified outcomes	The water prevents treats cures detoxifies or restores health
WATER SAFETY	Use recognised testing treatment and applicable drinking water standards	An investigational classification makes unsafe water safe or makes treatment unnecessary
PRODUCT OR SERVICE	Describe the investigational status method limits and evidence actually available	Certified safe effective therapeutic or wellness benefit without evidence appropriate to that claim

Table 13 Permitted wording and wording to avoid

Separate the Three Routes to People

Direct intake, water to plant to food, and water to aquaculture to aquatic food are different research pathways. Evidence from one route should not be transferred to another. A crop or aquaculture output cannot establish a human benefit, and an operator-mediated reading cannot establish safety, mechanism or clinical effect.

Public Material Must Show Research Status

Brochures, talks, videos, demonstrations and websites should identify established knowledge, Foundation observations and hypotheses in the material itself. Images should show real water and food pathways without implying proven healing, guaranteed yield, certified safety or a treatment outcome.

RESEARCH INTEGRITY AND INTELLECTUAL PROPERTY

Make the Research Auditable

A credible collaboration leaves a traceable record from the first question to the public report. Preregistration separates planned tests from later exploration. Data and analysis transparency should be as open as ethical, privacy, legal and intellectual property duties allow. Every limitation to access should be stated. [5,6]

REGISTRATION	Timestamp the study question hypotheses primary outcomes and decision rules before allocation is revealed.
PROTOCOL	Share or archive the method sample plan controls materials and approved amendments.
ANALYSIS	Lock the analysis plan and identify any later work as exploratory.
DATA AND CODE	Preserve raw data metadata codebooks exclusions and analysis code subject to privacy and lawful limits.
REPORTING	Link the report to the protocol and disclose deviations missing data uncertainty and every valid outcome.
CORRECTION	Use version control corrections or withdrawal when the record changes materially.

Set Authorship and Interests Before Publication

The collaboration agreement should record each contributor's role, authorship criteria, approval responsibility and accountability. Funding, patents, licences, service income, product interests, institutional relationships and other relevant conflicts should be disclosed. Contributor roles may be recorded with the CRediT taxonomy, while journal-specific authorship rules still apply. [7,8]

Publish Null Results and Correct the Record

The duty to report does not depend on whether a result supports the hypothesis. Null, mixed and opposite outcomes prevent repeated error and refine later protocols. Reports should link to the registered question, distinguish deviations from misconduct and issue corrections when data or interpretation changes materially.

Protect Intellectual Property Without Blocking Assessment

CATEGORY	MINIMUM POSITION
OPEN TO INDEPENDENT TEST	Target definition coded samples controls outputs acceptance rules operator training requirements and enough procedural detail to repeat the claim
MAY REMAIN PROTECTED	Patent claims manufacturing drawings source formulations security details and know how not required to evaluate the stated output
WHEN DISCLOSURE IS LIMITED	Use a neutral custodian challenge set preregistered comparison locked analysis and independent reporting or narrow the claim to what can be tested

Proprietary status does not validate a method. When protected details prevent a claim from being independently tested, the claim must be narrowed to the evidence that can be examined.

ROLES AND RELEASE BOUNDARIES

Give Each Audience a Constructive Role

Responsible translation does not require silence while research continues. It requires a clear role for each audience and a limit that protects readers, participants, animals, institutions and the evidence record.

AUDIENCE	APPROPRIATE ROLE	BOUNDARY
FAMILIES AND READERS	Know the source treatment storage and use history follow safety advice and ask what evidence supports a claim	Do not use an investigational reading to decide whether water is potable
PRACTITIONERS AND TRAINERS	Teach operational definitions consent recordkeeping uncertainty and referral to recognised services	Do not diagnose promise outcomes or present training as scientific validation
RESEARCHERS	Use coded controls independent measures preregistration complete data and pathway specific conclusions	Do not conceal null results or change outcomes after decoding without disclosure
INSTITUTIONS	Provide discipline specific review ethics oversight governance facilities and independent analysis	Do not permit sponsorship ownership or reputation to control interpretation
COMMUNICATORS	State evidence level uncertainty study conditions and the next unanswered question	Do not use imagery testimonials or headlines that imply proven healing safety or causation

Review Every Public Statement Before Release

EVIDENCE	Is the statement labelled as established knowledge Foundation observation or hypothesis?
SCOPE	Does it name the tested sample method setting time point outcome and pathway?
SAFETY	Does it preserve recognised water food aquaculture and medical safeguards?
UNCERTAINTY	Does it state replication status limitations alternatives and null or mixed findings?
VISUALS	Could the image headline testimonial or demonstration imply healing proof or certification?
NEXT STEP	Does it direct interest toward a defined research question rather than an untested promise?

Human and Animal Research Require Formal Oversight

Human intake research requires independent ethics review, voluntary informed consent, privacy protection, qualified supervision and continuing risk assessment. Aquaculture studies require applicable animal welfare, water quality and food safety oversight. Public participation, testimonials or service consent do not replace research approval. [4,8,9]

Reader takeaway. Water Energy Hygiene can be discussed publicly as an investigational framework when conventional safety remains primary, evidence levels stay visible and each claim is limited to the method and pathway tested. Institutional collaboration should be built around the seven work packages, independent interpretation and complete reporting. No product, treatment, safety certification or wellness claim should precede replicated evidence appropriate to that claim.

Public awareness and research collaboration [Aura Research Foundation Hyderabad Telangana India](https://www.energyhygienex.com)
www.energyhygienex.com

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PART FIVE RESPONSIBLE UNDERSTANDING AND COLLABORATION
CHAPTER 23

Scope Boundaries and A Beginning Not the End

Reader question *What can a reader responsibly take from the book today?*

Water Energy Hygiene offers a structured way to ask how source, treatment, storage, environment and intended use relate to direct intake, plant food and aquaculture food pathways. It does not yet establish an additional property of water, a mechanism of retention, a biological transfer or a health benefit. The value of the framework today lies in clearer records, safer questions and testable research. [1–6]

What the Book Establishes and What It Proposes

EVIDENCE LEVEL	WHAT IT INCLUDES	RESPONSIBLE USE
ESTABLISHED FOUNDATION	Water chemistry microbiology physiology plant science aquaculture science food safety and recognised measurement	Use for safety decisions and the scientific baseline
FOUNDATION REPORTS	Selected operator mediated observations involving water direct intake irrigation plant food and aquaculture pathways	Treat as a dated starting register with stated conditions and limitations
INVESTIGATIONAL SYSTEM	The operational frequency map WERRH OMRDA assessments within band deficit and proposed biological pathways	Test through controlled protocols and permit support modification or rejection

Water Energy Hygiene Remains Within the Third Pillar

Water Energy Hygiene is part of Lifestyle Energy Hygiene because drinking, hydration, irrigation, food production and aquaculture are daily lifestyle pathways. Source, Earth, treatment and surroundings connect it with Environmental Energy Hygiene. Proposed short term human assessment responses create an investigational interface with Personal Energy Hygiene. These connections do not create a fourth pillar.

UNDERSTAND	Water carries a traceable history of source treatment distribution storage container surroundings and intended use.
DISTINGUISH	Keep recognised science Foundation observations and hypotheses visibly separate.
PROTECT	Follow applicable water food aquaculture agricultural and medical safeguards.
DOCUMENT	Record what can be observed without treating the record as proof of mechanism or benefit.
QUESTION	Ask what method control uncertainty replication status and pathway support each statement.

The Present Conclusion Is Bounded

Readers may use the framework to notice missing information and form research questions. They should not use it to certify water, select or reject treatment, diagnose a person, predict benefit or replace qualified professional care.

CLOSING SOURCE TO LIFE CONTINUUM

Follow the Water and Keep the Evidence Separate

The continuum begins with the environmental history of water, moves through three lifestyle routes and reaches human life directly or through food. The route tells investigators where to measure and where to place controls. It does not demonstrate that a proposed adaptive or nonadaptive frequency moves through the route.

FRAMEWORK CONTEXT	WATER OR FOOD HISTORY	PATHWAY	BOUNDARY
ENVIRONMENTAL ENERGY HYGIENE	Earth source geology treatment distribution storage container and surroundings	Complete water history before use	Environmental context for every route
LIFESTYLE DIRECT ROUTE	Potable water selected for drinking	Water to direct intake and hydration	Human outcomes require a separate ethics approved study
LIFESTYLE PLANT FOOD ROUTE	Irrigation water soil crop and harvested food	Water to plant to food	Food to human translation remains a later question
LIFESTYLE AQUATIC FOOD ROUTE	Pond or tank water aquatic organisms and edible output	Water to aquaculture to food	Food safety and human effect remain separate gates
PERSONAL ENERGY HYGIENE INTERFACE	Short term human assessment records reported by the Foundation	Separate OMRDA evidence stream	Investigational response not diagnosis or clinical benefit

Figure 23 Closing source-to-life continuum

The Continuum Returns to the Three Pillars

ENVIRONMENTAL	Source Earth treatment distribution storage containers and surroundings define exposure history before water enters daily use.
LIFESTYLE	Drinking hydration irrigation agriculture aquaculture food handling and nutrition place water within the third pillar.
PERSONAL	Any proposed short term human assessment response remains an investigational interface requiring separate measurement and human research.

Material Flow and Investigational Transfer Are Different Questions

Water movement, irrigation, plant uptake, aquaculture conditions, food production and intake can be traced with recognised methods. Whether a Foundation-defined classification changes, persists or relates to a later biological outcome is a separate hypothesis. WERRH does not assume water memory, and no arrow in the figure is evidence of transfer or causation.

SCIENTIFIC AND SAFETY BOUNDARIES

The Boundaries Must Remain Visible

A useful research framework states where its present evidence stops. These boundaries protect public safety, prevent one observation from carrying several untested meanings and allow future evidence to change the framework without changing the record of what was originally claimed.

DOMAIN	CURRENT POSITION	BOUNDARY
CONVENTIONAL SAFETY	Accredited chemical microbiological mineral radiological and toxicological assessment remains primary	No investigational reading may declare unsafe water safe
NECESSARY TREATMENT	Filtration disinfection and other required treatment follow recognised guidance	Do not reduce or reject treatment because of an OMRDA classification
ULTRAVIOLET TREATMENT	Foundation reports concern selected assessed samples only	Do not generalise the observation to ultraviolet disinfection as a method
OPERATIONAL FREQUENCY MAP	400–752 Hz inclusive below 400 Hz above 752 Hz and within band deficit are Foundation defined constructs	Do not present them as established biological limits or measured water emissions
OMRDA	An operator mediated investigational apparatus and procedure	Do not describe it as a direct photon detector or conventional water quality test
BIOLOGICAL PATHWAYS	Plant aquaculture food and human outcomes require pathway specific independent measures	Do not transfer a finding from one route species crop sample or time point to another
HEALTH AND BENEFIT	Any human proposition requires ethics review safety monitoring and evidence appropriate to that claim	No promise of prevention diagnosis treatment cure detoxification or health improvement

Foundation Observations Remain Starting Observations

Aura Research Foundation has reported selected operator-mediated patterns involving water, short-term human assessments, irrigation, plant and food routes, and aquaculture output. These reports define questions for controlled study. They do not receive stronger status because they are repeated in a brochure, training programme, service description or product narrative.

OBSERVATION AREA	DOES NOT ESTABLISH
WATER RESPONSE	A repeatable independent physical mechanism or proof that water absorbed retained or emitted a nominated frequency
DIRECT HUMAN RESPONSE	Clinical benefit harm diagnosis prevention treatment or suitability for any person
PLANT AND FOOD	Superior crop performance nutrition food quality or a transferred effect in people
AQUACULTURE	Improved animal health welfare food quality safety or human benefit
POSITIVE OMRDA RESULT	Validation of WERRH water memory the operational classification or a product claim

Patents and Proprietary Methods Do Not Establish Evidence

Intellectual property may protect an apparatus, design or method. It does not prove scientific validity, safety or benefit. A research claim still requires a protocol that independent investigators can assess, even when selected implementation details remain protected.

ACTIONS AVAILABLE NOW

Readers Can Improve the Quality of the Question

Readers do not need to accept or reject the whole framework before acting responsibly. They can improve water histories, preserve safety records, separate pathways and ask whether a public statement matches the evidence available.

WATER HISTORY	Record source date treatment storage duration container temperature surroundings and intended use.
SAFETY RECORD	Retain recognised laboratory reports treatment records and applicable official advice.
PATHWAY	Identify direct intake plant food or aquaculture food before interpreting any later outcome.
EVIDENCE LEVEL	Mark each statement as established knowledge Foundation observation or hypothesis.
UNCERTAINTY	Ask what was blinded controlled measured repeated and independently assessed.
PROFESSIONAL CARE	Use qualified water agricultural aquaculture food safety and medical services when they are needed.

Institutions Can Test Without Endorsing

A university, laboratory or public institution may examine a defined claim without endorsing the wider framework, organisation, service or product. The collaboration agreement should preserve independent coding, measurement, analysis, authorship, conflict disclosure and publication of positive, opposite, mixed, null and inconclusive outcomes.

The Next Step Is a Transparent Research Sequence

STAGE	MINIMUM ACTION	RESULT
1 DEFINE	State the water condition route primary outcome alternative explanations and decision rule	A bounded question that can fail as well as succeed
2 CHARACTERISE	Record complete water history and recognised quality before investigational classification	A safe traceable sample and exposure record
3 CONTROL	Use coding blinding sham and matched arms qualified apparatus and independent measures	Evidence protected from avoidable bias and confounding
4 REPLICATE	Repeat across new batches operators methods teams and sites as the claim requires	A result whose level of independence is explicit
5 INTERPRET	Report positive opposite mixed null and inconclusive outcomes with uncertainty	A proposition that may be supported narrowed modified or rejected
6 TRANSLATE	Communicate only the evidence level method pathway and conditions actually tested	Public language that preserves safety and uncertainty

Every Credible Outcome Can Change the Framework

Replicated convergent findings may support a bounded proposition. Mixed results may identify conditions or measurement limits. Precise null or opposite findings may narrow, modify or reject a proposition. Open interpretation is therefore part of the method, not an obstacle to it. [2,4,5]

CLOSING REFLECTION

A Beginning Not the End

We began with a simple observation: water reaches people through more than a glass. It carries a history before direct intake and before it supports crops, food systems, fish and other aquatic organisms. That history deserves careful documentation.

Our Foundation reports led us to frame questions about defined exposures, operator-mediated responses, possible retention and later biological outcomes. This book has placed those reports beside established water science and converted them into propositions that can be tested. We do not regard repetition within our own work as the final answer.

We invite researchers and institutions to examine the questions with transparent protocols, recognised measurements, careful boundaries and independent interpretation. Evidence may support, narrow, modify or reject any proposition. Each outcome can improve the record when it is reported completely.

Er. Srinivas Baba Mannem Dr. Kanaka Mahalakshmi Mannem

Final Research Status and Responsible Use

This reader book combines established knowledge about water with an investigational framework proposed by Aura Research Foundation. The evidence level of each statement matters. Water chemistry, microbiology, physiology, plant science, aquaculture science and recognised water-safety practices provide the scientific foundation of the book.

Water Energy Hygiene, WERRH, OMRDA assessments, the proposed 400–752 Hz adaptive interval, outside-band nonadaptive classifications and within-band deficit remain Foundation-defined research constructs. They are not established biological limits or measured emissions from water.

Reports concerning selected water samples, short-term human assessments, irrigation, plant and food pathways, and aquaculture output are preliminary observations. They do not establish causation, clinical benefit, superior nutrition, food quality or improved human health.

No investigational reading may declare unsafe water safe, replace accredited microbiological, chemical, mineral, radiological or toxicological testing, or justify reducing necessary filtration, disinfection or treatment. Applicable drinking-water, agricultural, aquaculture, food-safety and medical guidance must be followed. Foundation observations involving selected ultraviolet-treated samples must not be generalised to ultraviolet disinfection as a method.

This book is for education, public awareness and research collaboration. It does not provide medical diagnosis or treatment, drinking-water certification, agricultural advice, aquaculture advice, food-safety advice or nutritional advice. It makes no promise of prevention, treatment, safety or health improvement.

Aura Research Foundation Hyderabad Telangana India www.energyhygienex.com

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- [3] World Health Organization. Guidelines for Drinking Water Quality. Fourth Edition Incorporating the First and Second Addenda. Geneva; 2022.
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APPENDIX A

Glossary and Operational Definitions

These definitions support consistent reading and research records. They do not convert investigational terms into established scientific categories.

TERM	WORKING DEFINITION
Adaptive-frequency-conditioned irrigation water (AFCIW)	Water exposed to a selected proposed adaptive setting under recorded conditions before irrigation. An investigational preparation, not a water-quality grade.
Adaptive-frequency-conditioned water	Water assigned a defined exposure within the proposed adaptive interval. The name records the procedure and does not establish a retained property.
Aquaculture output	Prespecified production observations such as survival, growth, feed conversion, biomass or harvest yield, interpreted with welfare and water-quality data.
AURA	Foundation term for an estimated human adaptive-field extent recorded through an operator-mediated method. It is not a clinical or conventional physiological measure.
Batch	A defined quantity of water collected or prepared under the same documented conditions and divided into study arms where possible.
Biological outcome	A prespecified plant, aquatic-organism or human measure obtained independently of the investigational water classification.
Blinding	Concealment of allocation or identity from the people whose expectations could affect handling, assessment, measurement or analysis.
Chain of custody	The dated record of who controlled, transferred, stored or opened a sample and under what conditions.
Coded sample	A sample labelled with an identifier that does not disclose its study allocation to blinded personnel.
Comparator	A matched control, sham, off-target or other prespecified condition used to interpret an exposed sample.
Conventional water quality	Recognised physical, chemical, microbiological, mineral, radiological or toxicological characteristics assessed with applicable methods.
Direct-intake pathway	The route from potable water to controlled drinking and separately measured short-term human outcomes.
Exposure condition	The fully described target, apparatus or source, setting, duration, distance, geometry, date, time and surrounding conditions.

Use Terms as Labels for Questions

A label such as adaptive-frequency-conditioned water describes what investigators did. Whether any response occurred, persisted or related to a biological outcome must be established separately.

APPENDIX A CONTINUED

Glossary and Operational Definitions

TERM	WORKING DEFINITION
Foundation observation	A dated report made by Aura Research Foundation that defines a question for controlled testing; it is not independent confirmation.
Independent correlate	A recognised physical, chemical, biological or physiological measure collected separately from OMRDA and analysed under a stated method.
Investigational classification	A Foundation-defined category awaiting validation and independent replication.
Matched control	A same-batch or closely comparable sample differing only in the intended study condition as far as practicable.
Nonadaptive classification	Foundation-defined designation for below 400 Hz, above 752 Hz or a within-band deficit. It is not an established biological limit.
OMRDA	An operator-mediated investigational apparatus and procedure that records a response under stated conditions; not a direct photon detector or conventional water-quality test.
Off-target condition	A deliberately selected exposure outside the nominated target setting, used as a comparator where appropriate.
Outcome	A variable and time point defined before decoding for evaluating a study question.
Potable water	Water meeting applicable drinking-water requirements for the intended population and setting. Investigational assessment never establishes potability.
Proposed adaptive interval	The inclusive range 400–752 Hz used in the Foundation's operational map. It remains investigational.
Response window	The prespecified period during which a water or biological response is assessed after an exposure or intake.
Retention interval	Elapsed time between the end of a defined exposure and a later assessment of the sample.
Same-batch aliquot	A separately coded portion taken from one mixed batch to reduce avoidable starting differences between arms.
Sham control	A condition made to resemble the test procedure without delivering the nominated active exposure.
Target setting	The prespecified exposure setting assigned to a study arm; the term does not imply that water receives, stores or emits that frequency.
Water history	The traceable record of source, treatment, distribution, storage, container, environment, handling and intended use.
Water Exposure–Response and Retention Hypothesis (WERRH)	The testable proposition that a defined exposure may be followed by a measurable water response that may persist, weaken or disappear over time.
Within-band deficit	A Foundation-defined condition in which an operator-mediated response within 400–752 Hz does not meet the prespecified completeness rule.

Frequency values in this book are assigned references within an operational assessment system. They are not presented as direct measurements of radiation or emission from water.

APPENDIX B

Evidence Language Guide

Use the strongest wording justified by the evidence—and no stronger. The guide applies to manuscripts, lectures, brochures, partnerships, interviews and digital media.

STATUS	USE	AVOID
ESTABLISHED KNOWLEDGE	Recognised evidence shows; current guidance recommends; measured by an accepted method	Using established water science as proof of WEH
FOUNDATION OBSERVATION	The Foundation reported; in selected assessed samples; an observed sequence	It is proven; water always responds; the effect is universal
HYPOTHESIS	We propose; may; could be tested by; predicts under defined conditions	Does; causes; retains; transfers—unless directly demonstrated
EXPLORATORY SIGNAL	A preliminary pattern was observed; hypothesis-generating; requires confirmation	Confirmed effect; breakthrough; validated mechanism
REPLICATED ASSOCIATION	A reproducible association under the tested conditions	Causation, mechanism or wider transfer without supporting evidence
NULL OR OPPOSITE	No prespecified difference was detected; the result opposed the prediction	There is no possible effect anywhere; the method is proved invalid in all settings
MIXED OR INCONCLUSIVE	Results varied; precision or execution prevented a decision	Selecting only favourable runs or calling uncertainty success

Minimum Qualifiers for Public Statements

EVIDENCE	Name whether the statement is established knowledge, a Foundation observation, a hypothesis or a study result.
METHOD	State what was assessed, with which method, controls and level of independence.
PATHWAY	Identify direct intake, plant food or aquaculture food; do not transfer a result between routes.
BOUNDARY	Keep conventional safety primary and state what the finding does not establish.

Preferred phrase: proposed adaptive interval. Avoid: normal or healthy frequency range.

APPENDIX C

Water Energy Hygiene Hypothesis Register

The register turns the framework into propositions that can be supported, narrowed, modified or rejected. It is not a list of established effects.

ID AND PROPOSITION	MINIMUM CONTROLS	OUTCOME AND DECISION
H1 WATER EXPOSURE-RESPONSE A defined exposure may be followed by a reproducible measurable response in water.	Same-batch coded aliquots; sham or unexposed control; random order; blinded assessment.	Prespecified water and OMRDA streams. Advance only after repeatability exceeds stated chance and error criteria.
H2 RESPONSE RETENTION AND DECAY A response may persist, weaken or disappear after exposure.	Matched time-zero and retention intervals; identical handling, storage and measurement schedule.	Time course, uncertainty and missingness. Advance only if the temporal pattern repeats in new batches.
H3 ADAPTIVE-FREQUENCY CONDITIONING Selected proposed adaptive settings may differ from sham, off-target or outside-band settings.	Concealed target, sham, off-target and/or outside-band arms; balanced sequence and exposure duration.	Primary coded classification plus independent measures. A positive result is bounded to tested settings.
H4 TREATMENT AND DISINFECTION COMPARISON Same-batch defined treatments may show different patterns after conventional characterisation.	Same source and batch; treatment records; recognised pre/post water-quality tests; blinded investigational assessment.	Separate safety, conventional change and OMRDA streams. Never infer that a necessary treatment is harmful or unnecessary.

Decision Rule for Every Hypothesis

Specify the primary comparison, outcome, time point, uncertainty and advance/stop rule before decoding. A favourable OMRDA classification alone does not demonstrate a physical mechanism, safety or biological benefit.

STATUS	All eight hypotheses remain investigational. Independent replication and recognised measurements determine whether each proposition advances.
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APPENDIX C CONTINUED

Water Energy Hygiene Hypothesis Register

ID AND PROPOSITION	MINIMUM CONTROLS	OUTCOME AND DECISION
H5 STORAGE, CONTAINER AND ENVIRONMENT Duration, container or surroundings may alter or confound an observed response.	Factorial or one-factor comparisons; same batch; temperature, light, headspace, contact time and handling records.	Conventional and investigational outcomes analysed separately. Treat uncontrolled differences as confounding.
H6 DIRECT WATER-TO-HUMAN RESPONSE Selected water conditions may be followed by reproducible short-term defined human outcomes.	Potable water; ethics approval and consent; coded crossover or parallel design; baseline, intake and expectancy controls.	A prespecified independent human measure and safety data. No clinical claim from a short-term assessment.
H7 WATER-TO-PLANT AND FOOD Conditioned irrigation may be followed by reproducible plant, crop or food differences.	Randomised plots/pots; matched seed, soil, water quantity and nutrients; environmental records; blinded outcome assessment.	Plant performance, yield and food-safety measures. Human benefit requires a later separate study.
H8 WATER-TO-AQUACULTURE Selected adaptive-frequency support may be followed by reproducible aquaculture differences.	Randomised tanks; matched stock, density, feed and husbandry; continuous welfare and conventional water-quality safeguards.	Tank-level survival, growth, feed conversion, biomass and safety. No food or human benefit follows automatically.

Translation Requires Separate Gates

WATER	Demonstrate a reproducible water response under controlled conditions.
BIOLOGICAL UNIT	Demonstrate a separate plant, tank or human outcome with appropriate controls.
FOOD	Assess composition, contaminants and safety with recognised methods where food is involved.
HUMAN	Study human exposure and outcomes separately under ethics and safety oversight.

APPENDIX D

Foundation Observation Register

This register preserves the Foundation’s reported starting observations while separating them from causal conclusions and future tests.

REPORTED SEQUENCE	CURRENT STATUS	DOES NOT ESTABLISH	NEXT TEST
Selected defined exposures followed by different OMRDA water classifications.	Foundation observation; method-dependent and investigational.	A direct emission, retained frequency, mechanism or universal water property.	Coded same-batch reliability study with sham, off-target and independent measures.
Selected water conditions followed by short-term measured human AURA responses.	Preliminary operator-mediated human observation.	Diagnosis, clinical benefit, harm, hydration superiority or suitability for a person.	Ethics-approved blinded study with a prespecified independent human outcome.
Selected UV-treated samples received proposed nonadaptive classifications and were followed by a reported short-term human response.	Selected-sample Foundation observation only.	That ultraviolet disinfection generally harms water or people, or should be reduced or avoided.	Same-batch treatment comparison with dose, quality, safety and concealed assessments.
Adaptive-frequency-conditioned irrigation was followed by reported crop or food observations.	Preliminary irrigation and plant-food observation.	Causation, superior nutrition, food safety, transfer to food or benefit in people.	Randomised replicated plant study with soil, climate, yield and food measures.
Selected adaptive-frequency support was associated with reported aquaculture output differences.	Preliminary production association requiring standardised endpoints.	Improved fish health, welfare, food quality, safety or human benefit.	Randomised tank-level study with water quality, welfare, production and safety outcomes.

How to Maintain the Register

Add the date, sample or cohort, operators, conditions, raw record location, deviations, conventional measurements and evidence level. Preserve null, opposite, mixed and inconclusive observations alongside favourable ones.

UV BOUNDARY	Observations involving selected assessed samples must never be generalised to ultraviolet disinfection as a method. Required treatment and recognised water-safety guidance remain primary.
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APPENDIX E

Water Source, Batch and Exposure-History Record

Complete this record before interpreting an investigational result. Attach laboratory certificates, treatment logs and custody records rather than copying incomplete summaries.

FIELD	RECORD
STUDY AND SAMPLE	Study ID: _____ Batch ID: _____ Sample code: _____ Intended route: _____
SOURCE	Source type/name: _____ Catchment/site: _____ Coordinates if relevant: _____
COLLECTION	Date/time: _____ Collected by: _____ Method: _____ Initial volume: _____
SOURCE CONDITIONS	Weather/season, land use, geology or source events: _____
TREATMENT HISTORY	Process, device, dose/settings, date/time and operator: _____
DISTRIBUTION	Pipe/vehicle/transfer points and elapsed time: _____
STORAGE	Container material/ID: _____ Sealed/open: _____ Temperature: _____ Light: _____ Duration: _____
BASELINE QUALITY	Report/certificate ID: _____ Sampling date: _____ Status against applicable standard: _____
EXPOSURE ARM	Target / sham / off-target / outside-band / unexposed control / other: _____
EXPOSURE DETAILS	Assigned reference and setting: _____ Start/end: _____ Duration: _____ Distance/geometry: _____
SURROUNDINGS	Location, equipment, people, temperature, light, electrical sources and other relevant conditions: _____
POST-EXPOSURE	Transfer, storage and intended assessment times: _____
DEVIATIONS	Unexpected events, seal breaks, delays or handling differences: _____
CUSTODY	Prepared by/date: _____ Received by/date: _____ Final disposition: _____

Do not write “adaptive water” as the source description. Record the ordinary water history first, then the assigned exposure arm.

APPENDIX F

Conventional Water-Quality Record

Use methods and acceptance criteria appropriate to the source, intended use and jurisdiction. Accredited testing and recognised safety decisions remain separate from OMRDA.

Study/batch _____ Laboratory/report _____ Applicable standard _____

PARAMETER GROUP	RESULT / UNIT	METHOD / DATE	REFERENCE / STATUS
Context and sensory observations			
Temperature	_____	_____	_____
pH	_____	_____	_____
Conductivity / TDS	_____	_____	_____
Turbidity	_____	_____	_____
Dissolved oxygen			
Oxidation-reduction potential			
Hardness / alkalinity			
Major ions and minerals			
Microbiological indicators			
Targeted chemicals / toxicants	_____	_____	_____
Radiological where applicable			
SAFETY FIRST	An OMRDA classification cannot declare unsafe water safe, certify potability or replace prescribed treatment, monitoring or accredited analysis.		

APPENDIX G

Exposure and Retention Time-Course Matrix

Prespecify the intervals and outcome rules. A time-related pattern is evidence for a measured association under the tested conditions—not proof of “water memory.”

ITEM	PRESPECIFIED RECORD					
BATCH AND ALIQUOTS	Batch ID: _____ Mixing/aliquot method: _____ Codes: _____					
ARMS	Target: _____		Sham: _____		Off-target/outside-band: _____ Unexposed: _____	
EXPOSURE	Source/apparatus: _____		Setting: _____		Duration: _____ Distance/geometry: _____	
PRIMARY OUTCOME	Measure and decision rule: _____					
TIME POINTS	T0 pre-exposure: _____		T1 immediate: _____		T2: _____ T3: _____ T4: _____	
ARM / CODE	T0	T1	T2	T3	T4	DEVIATION
Target						
Sham						
Off-target						
Outside-band						
Unexposed						

Analysis Record

Model/contrast: _____ uncertainty interval: _____ exclusions: _____
code opened by/date: _____

Report all planned time points, missing observations and deviations. Distinguish repeatability of OMRDA from any independent water measure.

APPENDIX H

Sample Coding, Blinding and Chain-of-Custody Overview

Separate roles and conceal allocation wherever expectations could influence preparation, handling, assessment or analysis.

ROLE	RESPONSIBILITY	MUST NOT KNOW OR CHANGE
CONDITIONER	Applies assigned exposure exactly as scheduled.	Outcome data, may not relabel or select samples.
CODER / RANDOMISER	Generates concealed allocations and balanced sequence.	May not influence preparation, assessment or exclusions.
CUSTODIAN	Controls seals, transfers, storage and access log.	May not reveal identities before authorised decoding.
OMRDA OPERATOR	Assesses coded samples using the locked procedure.	Allocation, expected result, prior readings or biological outcomes.
INDEPENDENT ASSESSOR	Collects conventional or biological measures.	OMRDA result and allocation where feasible.
ANALYST	Applies the locked data plan to labelled arms or concealed codes.	Identity until data cleaning and primary analysis are complete.

Coding and Decoding Sequence

1 RANDOMISE	Generate the allocation and code list independently from assessment.
2 LABEL	Apply tamper-evident coded labels and verify them against the custody record.
3 ASSESS	Complete all planned measurements, deviations and exclusions without decoding.
4 LOCK	Freeze the cleaned dataset, primary analysis and decision rule.
5 DECODE	Open the key with two-person confirmation and record the date, time and reason.

APPENDIX H CONTINUED

Sample Coding, Blinding and Chain-of-Custody Overview

SAMPLE / SEAL	FROM / TO	DATE / TIME	CONDITION / ACTION	SIGNATURES

Code-Key Control

FIELD	RECORD
KEY CUSTODIAN	Name/role: Secure location/version:
ACCESS	Authorised persons: Access log reference:
DATA LOCK	Dataset/version: Locked by/date/time:
DECODING	Reason: Date/time: Witnesses:
BREACH OR DEVIATION	What occurred, affected samples, containment and analysis decision:
FINAL DISPOSITION	Return/archive/destruction method, authority and date:

A code is not blinded if labels, order, container, handling or conversation allow the allocation to be guessed.

APPENDIX I

Direct-Intake Study Outline

A reader-level outline for an ethics-approved human pilot. It is not a clinical protocol and must not be used to advise personal water selection or treatment.

ELEMENT	MINIMUM DESIGN REQUIREMENT
PREREQUISITES	Potable water confirmed; complete batch history; apparatus/reliability stage passed; question and gate justified.
OVERSIGHT	Independent ethics review, informed consent, privacy protections, trial registration where applicable and adverse-event plan.
DESIGN	Randomised coded crossover or parallel comparison with sham/matched control and a prespecified washout if required.
PARTICIPANTS	Eligibility, exclusions, vulnerability safeguards, medications/conditions and withdrawal rights defined before recruitment.
INTAKE	Volume, temperature, timing, fast/no meal state, co-intake, container and adherence standardised.
BASELINE	Hydration context, relevant conventional physiology, expectancy and primary outcome collected before intake.
OUTCOMES	One prespecified independent primary human measure at a defined time; secondary and OMRDA outcomes kept separate.
SAFETY	Clinical oversight appropriate to risk, stopping rules, adverse-event review and no delay of necessary care.
ANALYSIS	Effect size and uncertainty; period/order effects where relevant; all exclusions and missing data reported.
DECISION GATE	Advance only after method quality, safety and replication criteria are met: otherwise repeat, refine or stop.
BOUNDARY	A short-term human response does not establish hydration superiority, diagnosis, prevention, treatment, clinical benefit or suitability for any individual.

APPENDIX J

Water-to-Plant and AFCIW Study Outline

This outline isolates irrigation water as an experimental factor while keeping agronomy, food safety and the later human pathway distinct.

ELEMENT	MINIMUM DESIGN REQUIREMENT
QUESTION	Name the crop, growth stage, water condition, primary outcome, time point and advance/stop rule.
UNIT AND REPLICATION	Define independent pots, trays or plots; justify sample size; block for greenhouse/field gradients.
BIOLOGICAL MATERIAL	Record species, cultivar, seed lot, viability, planting density and starting condition.
SOIL OR MEDIUM	Standardise source, composition, nutrient status, mass/volume, drainage and amendments.
WATER	Use a documented batch; confirm suitability for irrigation; standardise volume, schedule, temperature and delivery.
EXPOSURE ARMS	AFCIW target, sham and matched controls; concealed preparation labels; avoid cross-contact.
ENVIRONMENT	Record light, temperature, humidity, pests, weather and position; rotate or block as prespecified.
PRIMARY OUTCOME	Choose one outcome such as germination, biomass or yield; use blinded measurement where possible.
SECONDARY OUTCOMES	Growth, physiology, quality and soil measures; OMRDA recorded as a separate evidence stream.
FOOD AND TRANSLATION	Test edible output with recognised safety/composition methods. Any human effect requires a later ethics-approved study.
INTERPRETATION	Report water use, agronomic conditions, effect size, uncertainty and all null or adverse findings. Do not describe yield or composition as human benefit.

APPENDIX K

Aquaculture Study Outline

This outline treats the tank or pond as the experimental unit and places animal welfare, conventional water quality and food safety ahead of investigational interpretation.

ELEMENT	MINIMUM DESIGN REQUIREMENT
QUESTION	Name the species/life stage, water exposure, tank-level primary outcome, duration and decision gate.
UNIT AND REPLICATION	Randomise independent tanks or ponds; justify tank count; avoid treating animals in one tank as independent replicates.
STOCK	Record source, health status, acclimation, life stage, initial biomass, density and allocation procedure.
WATER SYSTEM	Document source, exchange, filtration, aeration, temperature, pH, dissolved oxygen, nitrogen species, salinity and other relevant parameters.
EXPOSURE ARMS	Target adaptive-frequency support, sham and matched controls; concealed labels and balanced equipment placement.
HUSBANDRY	Standardise feed lot, ration, feeding schedule, handling, light cycle, maintenance and disease management.
WELFARE	Use approved monitoring, humane endpoints, veterinary/aquatic-animal oversight and predefined emergency actions.
OUTCOMES	Tank-level survival, growth, feed conversion, biomass or harvest yield; OMRDA kept in a separate evidence stream.
FOOD SAFETY	Apply recognised residue, contaminant, microbiological, traceability and harvest requirements where food is produced.
DECISION GATE	Advance only after replicated tank-level effects, acceptable welfare and safety, and transparent uncertainty.
BOUNDARY	An aquaculture output observation does not by itself establish fish health, improved welfare, superior food quality, food safety or benefit to people who eat the product.

APPENDIX L

Ethics, Authorship, Publication and Responsible Communication Principles

Ethical protection is a condition of credible research, not an administrative step after the scientific design is complete.

DOMAIN	MINIMUM PRINCIPLE
HUMAN PARTICIPANTS	Independent ethics review, scientific validity, proportionate risk, voluntary informed consent and the right to withdraw.
VULNERABILITY	Additional safeguards for children, dependent relationships, illness, economic disadvantage or limited decision-making capacity.
PRIVACY	Collect only needed data; define access, coding, retention, sharing and secure disposal before enrolment.
SAFETY AND CARE	Use potable water, adverse-event monitoring and stop rules; never delay established treatment or clinical care.
ANIMALS	Obtain applicable approval, justify use and numbers, apply replacement/reduction/refinement and protect welfare throughout.
ENVIRONMENT	Prevent contamination, escape, ecological harm and inappropriate release; comply with source, discharge and biodiversity rules.
FOOD SYSTEMS	Maintain traceability, hygiene, contaminant controls and legal safety requirements; research labels do not certify food.
COMMUNITIES	Respect local knowledge, water rights, benefit sharing, cultural context and transparent engagement without coercion.
DATA INTEGRITY	Use attributable, legible, contemporaneous, original and accurate records with auditable corrections.
STOP CRITERIA	Define safety, welfare, feasibility and scientific-invalidity thresholds before the study begins.

Local law, institutional policy and specialist review govern each study. This appendix is an orientation, not an ethics application or regulatory determination.

APPENDIX L CONTINUED

Ethics, Authorship, Publication and Responsible Communication Principles

AREA	COMMITMENT
PROTOCOL AND REGISTRATION	Date and preserve the question, primary outcome, analysis, exclusions and decision gate; register when an appropriate registry exists.
AUTHORSHIP	Assign authorship to qualifying contributors and describe roles using a recognised contributorship taxonomy such as CRediT.
FUNDING AND CONFLICTS	Disclose financial, institutional, personal, patent, service and product interests and the sponsor's role.
INDEPENDENCE	Protect independent coding, measurements, analysis, interpretation, access to data and the right to publish.
COMPLETE REPORTING	Publish positive, opposite, mixed, null and inconclusive outcomes; report deviations, missing data and adverse findings.
DATA AND MATERIALS	State what can be shared, under what safeguards, and how qualified investigators may examine methods or records.
CORRECTION	Correct the public and scientific record promptly; retain version history and explain material changes.
INTELLECTUAL PROPERTY	A patent or proprietary method may define ownership but does not demonstrate validity, safety or benefit.
PUBLIC COMMUNICATION	Name the evidence level, tested conditions, limitations and safety boundary; avoid testimonials as proof.
PARTNERSHIP LANGUAGE	Participation in a study does not imply institutional endorsement of the wider framework, organisation, service or product.
PUBLIC PROMISE	Do not promise prevention, diagnosis, treatment, cure, detoxification, superior nutrition, food safety, improved animal health or human health benefit without evidence and authority appropriate to that claim.

APPENDIX M

Consolidated Bibliography and Suggested Further Reading

Sources are grouped by the established knowledge or research-practice area they support. Foundation materials document the origin of the investigational framework and do not count as independent validation.

Water Science, Safety, Source and Treatment

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Consolidated Bibliography and Suggested Further Reading

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Consolidated Bibliography and Suggested Further Reading

Measurement, Reproducibility, Ethics and Open Science

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- Aura Research Foundation. Water Energy Hygiene Four-page Public Awareness Brochure. Hyderabad; 2026.
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- Aura Research Foundation. OMRDA technical, apparatus, observational and patent records. Institutional archive.
- Aura Research Foundation. Agriculture and Human Energy Hygiene research-framework materials. Hyderabad; 2026.

Online codes and standards should be checked against the current applicable edition before a study or safety decision.

APPENDIX N

Copyright, Intellectual Property and Institutional Information

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Conventional water, food, agricultural, aquaculture and medical safeguards remain primary. Selected observations involving UV-treated samples must not be generalised to ultraviolet disinfection as a method. This book is educational and does not provide diagnosis, treatment, water certification, food-safety advice or a promise of benefit.

Institutional Information

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APPENDIX O

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End of Water Energy Hygiene Foundations