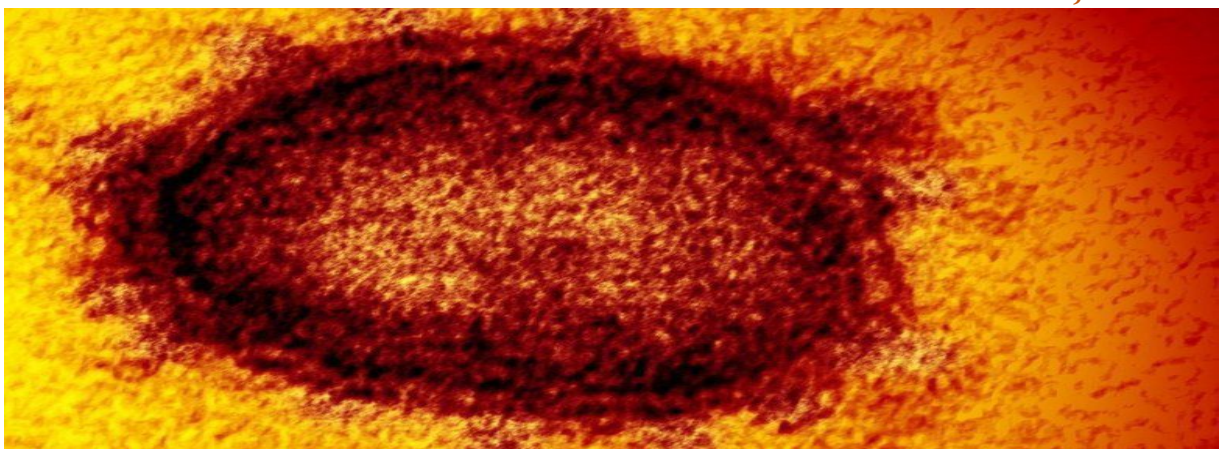
VerifiGlobal
June 2020 Newsletter

June 2020



MAKING A DIFFERENCE IN THE WORLD

This issue of the VerifiGlobal newsletter looks at the COVID-19 pandemic and how it is causing us to rethink the way we do things. While the pandemic is truly devastating, our experiences can be translated into new knowledge and then applied to help us navigate towards a more sustainable future.

As we seek sustainability, we are reminded of the complexity of ecosystems and the need for integration across all segments of society and the economy. With COVID-19, we are faced with the robustness of the virus, the speed of contagion, and the need for rapid action to address the crisis.

Looking long term, it has become increasingly clear that addressing ongoing deterioration of our planet requires meaningful engagement with the global community in order to mobilize a consolidated effort across a broad spectrum of activity.

So, what have we learned?

We need to be prepared and willing to invest in the necessary quality infrastructure to ensure that our efforts contribute to achieving sustainability goals. While there is a long way to go in establishing a resilient framework for a sustainable planet, it seems that society may now be up to the challenge.

INNOVATORS LEAD THE WAY

This issue features some technology innovators that are addressing environmental and health issues in a cost-effective way. Learn more about Battelle on page 13, Ozonator on page 15 and Stony Brook University on page 17.

LEADERSHIP

THE ABILITY TO UNDERSTAND OUR SHARED VULNERABILITIES AND THE WISDOM TO DRAW UPON OUR COLLECTIVE STRENGTHS

Global sustainability and resiliency require a commitment to take action, the mobilization of institutional capacity and the application the necessary tools to support informed decisions.

The COVID-19 pandemic caused by the SARS-CoV-2 virus (Severe Acute Respiratory Syndrome-Corona Virus 2), is primarily a health crisis, but it has far-reaching economic consequences. Worldwide, it is disrupting livelihoods of millions of people, with disproportionate impact on the poor. Governments worldwide have been scrambling to adapt to and mitigate the spread of the virus. (UNIDO 2020).

In offering a more optimistic perspective, the cross-cutting theme of this issue, **"Making a Difference in the World",** brings together some ideas on how the pandemic is reshaping our thinking. (Pages 3-4).

The principal article examines the role of quality management infrastructure in ensuring that the evidence used to inform decisions is accurate, reliable and credible. The UNIDO report "Quality & Standards and their Role in Responding to COVID-19" is highlighted followed by an analysis of the requirements for quality, capacity and best practices to support effective innovation, entrepreneurship and investment. Underpinning these efforts is our ongoing challenge for finding innovative ways of achieving global sustainability and resiliency. (Pages 5-12).

VerifiGlobal

Cooperation to facilitate deployment of innovative technologies
Engage with innovative technology providers and connect them to market opportunities

Collaboration to solve complex problems and challenges
Address market-pull and demand-side aspects of innovative technology development and deployment

Technology performance verification through qualified technical organizations
Support clients through customized services

RETHINKING THE WAY WE DO THINGS (AND THE WAY THINGS ARE DONE)

Mark Halle and Scott Vaughan, Senior Fellows at the International Institute for Sustainable Development (IISD), point out that *COVID-19 has changed everything. But if we take the right steps and trust science, a lot of good can happen*. In their April 2, 2020 blog, **"Could the COVID-19 Pandemic Give the 2020 Environmental Agenda a Much-Needed Boost?"** they focus on six observations

1. SCIENTISTS IN THE SPOTLIGHT—LET'S KEEP THEM HERE - *Science and the opinions of experts are suddenly being given their true value. We can hope that, once COVID-19 subsides, those scientists who warned of the public health, economic, and ecological consequences of global warming and the rapid loss of the planet's biodiversity will be heeded.*

2. "GREEN" STIMULUS SPENDING TO HELP ACHIEVE SUSTAINABLE DEVELOPMENT GOALS - *We have the chance to turn a new round of stimulus spending "green" by focusing funds on actions that create employment, advance a just transition, address climate and biodiversity priorities, and help achieve the Sustainable Development Goals.*

3. THE TIME FOR STRATEGIC SPENDING TOWARD A LOW-CARBON FUTURE IS NOW - *Now that we are injecting trillions of dollars in public funding, we have a once-in-a-lifetime opportunity to ensure we fund the transition to a sustainable future while relaunching the economy. A significant proportion of this emergency funding ought to focus on a new generation of green investments, from expanding net-zero carbon energy and transport systems to increasing and funding protected areas and forging green food systems.*

4. REDESIGNING A GLOBAL TRADING SYSTEM THAT WORKS WITHIN THE NATURAL ORDER - *We can redesign a global trading system that works within the natural order. Yet the global pandemic will need to trigger even broader rethinking and a shift in priorities, so trade policy spends as much time mapping risks and halting trade in products and services that put millions at risk as pulling down barriers to trade.*

5. CONCERNED CITIZENS CAN NO LONGER BE IGNORED - *The pandemic also demonstrates that people and their individual and community actions matter. Rather than leaving mitigation and containment responses to others—other communities, other experts, other countries—families and communities have a direct way to help "flatten the curve."*

6. RESPONDING TO RISK - *This pandemic has shown that, when faced with immediate and acute health risks, people will respond. Yet, while many jurisdictions and cities declared a climate emergency, there is little evidence that responses looked much different from business-as-usual. The real test will be the actions of concerned people who trust science and want to do their share.*

Learn more at: https://www.iisd.org/blog/covid-19-environmental-agenda

IISD
International Institute for Sustainable Development

The International Institute for Sustainable Development (IISD) is an independent sustainability think tank. Its vision is a balanced world where people and the planet thrive. Its mission is to accelerate solutions that drive a global transition to fair economies, clean water and a stable climate. **https://www.iisd.org**

RETHINKING THE WAY WE DO THINGS (AND THE WAY THINGS ARE DONE)

Additional perspectives from numerous sources:

Wharton	**WHAT THE COVID-19 CURVE CAN TEACH US ABOUT CLIMATE CHANGE** https://knowledge.wharton.upenn.edu/article/what-can-the-covid-19-pandemic-teach-us-about-climate-change/
	COVID-19 HAS LAID BARE HOW UNPREPARED WE ARE FOR CRISES — AND CLIMATE CHANGE WILL TEST US EVEN MORE https://www.cbc.ca/news/canada/british-columbia/covid-19-climate-change-crisis-opinion-1.5554971
WORLD ECONOMIC FORUM	**HOW OUR RESPONSES TO CLIMATE CHANGE AND THE CORONAVIRUS ARE LINKED** https://www.org/agenda/2020/04/climate-change-coronavirus-linked/
FT	**CAN WE TACKLE BOTH CLIMATE CHANGE AND COVID-19 RECOVERY?** https://www.ft.com/content/9e832c8a-8961-11ea-a109-483c62d17528
	WHAT COVID-19 AND CLIMATE THREATS HAVE IN COMMON https://www.xprize.org/articles/covid-19-and-climate-change
IGES	**IMPLICATIONS OF COVID-19 FOR THE ENVIRONMENT AND SUSTAINABILITY** https://www.iges.or.jp/en/news/20200514
DW	**CORONAVIRUS AND CLIMATE CHANGE: A TALE OF TWO CRISES** https://www.dw.com/en/coronavirus-climate-change-pollution-environment-china-covid19-crisis/a-52647140
Ecosystem Marketplace	**THINK THE COVID CATASTROPHE IS EXPENSIVE? THE CLIMATE ONE COULD COST $1 QUADRILLION** https://www.ecosystemmarketplace.com/articles/20544/
Forbes	**TEN AREAS WHERE COVID-19 RESPONSES HAVE INCREASED ENVIRONMENTAL RISKS** https://www.forbes.com/sites/nishandegnarain/2020/04/16/ten-areas-where-covid-19-responses-are-leading-to-environmental-setbacks/#44350d0f4252
	AFTER THE COVID-19 CRISIS, WILL WE GET A GREENER WORLD? https://www.theguardian.com/environment/2020/may/17/after-the-covid-19-crisis-will-we-get-a-greener-world?CMP=Share_iOSApp_Other

"Making a difference in the world"

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

The United Nations Industrial Development Organization (UNIDO) plays an important role in promoting inclusive and sustainable industrial development that creates shared prosperity through training and skills development, accelerated capacity building and risk mitigation.

QUALITY & STANDARDS AND THEIR ROLE IN RESPONDING TO COVID-19

In April 2020, the United Nations Industrial Development Organization (UNIDO) published a report on the implications and challenges related to quality management and the promulgation of standards. The report provides an initial analysis of quality and standards in mitigating the negative effects of the global crisis arising from the COVID-19 pandemic. [1]

The report has two parts:
PART 1: COVID-19 Implications and the Role of Quality and Standards
PART 2: COVID-19 and the Sustainable Development Goals

Urgency to Act

Part 1 states that *"COVID-19 is a virus which has paralysed human interaction worldwide; it does not respect borders and has proliferated in every country despite efforts by many governments"*, and that international cooperation is essential "*to mitigate the further spread of the corona virus and to reconstruct our societies"*. It also points out that *"the coronavirus pandemic presents an opportunity for the human family to act in solidarity … to achieve the Sustainable Development Goals"* - a key observation about the importance of informed decisions in navigating a path towards greater resiliency.

The section on **"COVID-19 and World Trade"** discusses food and medical supply chains and the issue of trade restrictions. It points out that World Trade Organization (WTO) members are free to adopt trade measures deemed necessary to protect public health and welfare. Two WTO agreements address measures adopted by members to protect public health or public safety – the Agreement on the Application of

[1] The report does not claim to be exhaustive, directing readers to the UNIDO website for more detailed information on the overall UNIDO response to COVID-19: https://www.unido.org/unidos-comprehensive-response-covid-19

Sanitary and Phytosanitary Measures (SPS Agreement) and the Agreement on Technical Barriers to Trade (TBT Agreement). Both the SPS and TBT agreements require WTO members to notify others of any new or changed requirements which affect trade, and to respond to requests for information on new or existing measures.

Evidence-based decisions

*"The **SPS Agreement** establishes that members have the right to restrict trade by taking SPS measures necessary for the protection of human, animal or plant life or health. These measures should only be applied to the extent necessary to achieve their objectives, be based on scientific principles and be supported by scientific evidence. In situations where relevant scientific evidence is insufficient, members may provisionally adopt SPS measures on the basis of available pertinent information."*

Conformity assessment

*"The **TBT Agreement** aims to ensure that technical regulations, standards and conformity assessment procedures are non-discriminatory and do not create unnecessary obstacles to trade. At the same time, it recognises WTO members' right to implement measures to achieve legitimate policy objectives, such as the protection of human health and safety."*

Quality management and preparedness

The section on **"Quality Infrastructure in the Context of COVID-19"** examines the role of quality infrastructure in promoting inclusive and sustainable industrial development. Quality infrastructure preparedness is imperative in the fight against the global pandemic, to prevent the health system from being strained and laboratory services from collapsing. *"Ensuring the quality and accuracy of laboratory-developed tests will increasingly provide an essential contribution to the diagnostic reasoning, managed care and therapeutic monitoring of the vast majority of human diseases"*.

What does this tell us about addressing the integrity of ecosystems and societal well-being across our fragile planet? It reminds us that the system comprising the organizations, policies, regulatory framework, and practices needed to support and enhance the quality, safety and environmental soundness of goods and services and processes relies on **metrology, standardization, accreditation, conformity assessment and market surveillance**.

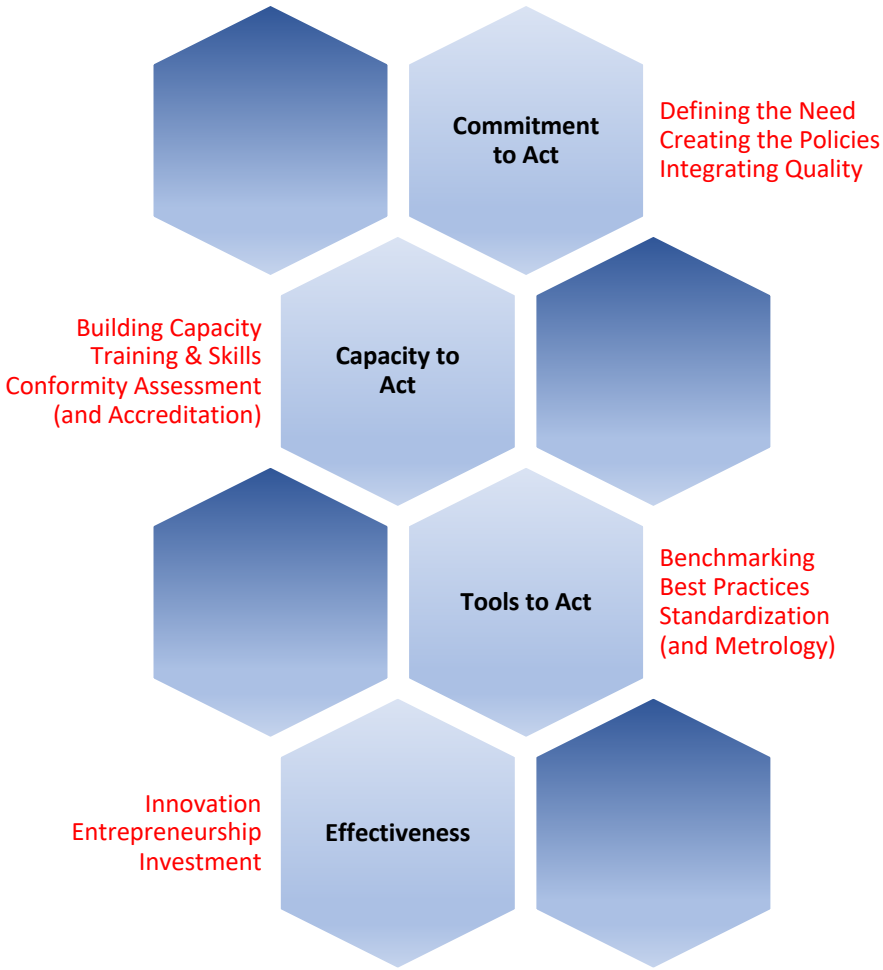
To download the report, go to: ***https://www.unido.org/sites/default/files/files/2020-04/Quality%20and%20Standards%20and%20their%20Role%20in%20Responding%20to%20COVID-19.pdf***

UNIDO's approach to quality infrastructure development is systemic and holistic, from building awareness to helping initiate, develop and strengthen a fit-for-purpose quality infrastructure that runs efficiently and is cost-effective. UNIDO promotes good practice, capacity building and training, and fosters global cooperation in the development of standards setting, measurement and compliance along value chains. UNIDO works with partners from the public and private sectors, academia, national and international organizations engaged in standards development, and global metrology, standards and conformity assessment practice.

Achieving Sustainability and Greater Resiliency: Lessons from Covid-19

Leadership is defined by humility, the ability to understand our shared vulnerabilities, and the wisdom to draw upon our collective strengths. Leadership in navigating towards sustainability and greater resiliency requires a commitment to take action, the mobilization of institutional capacity and the application the necessary tools to support informed decisions. This means defining needs, creating policies, building capacity and applying best practices for effective innovation, entrepreneurship and investment.

Achieving Sustainability and Greater Resiliency: Quality, Capacity & Best Practices for Effective Innovation, Entrepreneurship & Investment



Essential Elements #1 Commitment	Understanding Quality Systems in the Context of COVID-19 UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION From: "QUALITY & STANDARDS AND THEIR ROLE IN RESPONDING TO COVID-19" UNIDO, April 2020	Lessons for Achieving Global Sustainability and Resiliency VerifiGlobal
1. Commitment to Act >> Defining the Need >> Creating the Policies >> Integrating Quality		
Defining the need and the urgency to act	Urgency to act in mitigating the negative effects of the global crisis arising from the COVID-19 pandemic.	Urgency to act in mitigating the negative effects of the global environmental crisis.
Creating policies to facilitate informed decisions based on reliable data:	Policies to ensure global preparedness in the fight against the pandemic.	Strengthening policies to ensure global preparedness in preventing environmental destruction.
Integrating quality by clearly defining the roles and responsibilities of institutions (i.e., Standards, Metrology, Accreditation) and conformity assessment service providers:	Defining roles/responsibilities for effective quality assurance and control during times of uncertainty, when emergency management requires rapid responses and synchronized efforts to prevent the health system medical laboratory services from collapsing.	Defining roles/responsibilities for effective quality assurance and control, based on multi-disciplinary responses and integrated efforts to prevent ecosystems from collapsing. Making sustainable solutions a reality requires strengthening the roles and responsibilities of stakeholders in the context of a Quality Management Framework for achieving the Sustainable Development Goals (SDGs).

ISO 14034:2016 Environmental management — Environmental technology verification (ETV) published in November 2016 by International Organization for Standardization (ISO).

ETV is a quality-assured process that provides independent confirmation of the performance of environmental technologies based on objective evidence:

Supports informed decision-making and enhances the effective demonstration, deployment and market acceptance of innovative technology-based solutions.

3 key principles help ensure that verifications are performed and reported accurately in a manner useful to stakeholders:

Flexibility in specifying relevant performance parameters and test methods;

Credibility in generating reliable performance data using robust, quality-assured test procedures;

Transparency in assessing the evidence and verification results in reports that are clear, complete, and objective.

Essential Elements #2 Capacity	Understanding Quality Systems in the Context of COVID-19 UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION From: "QUALITY & STANDARDS AND THEIR ROLE IN RESPONDING TO COVID-19" UNIDO, April 2020	Lessons for Achieving Global Sustainability and Resiliency VerifiGlobal
2. Capacity to Act >> Building Capacity >> Training and Skills >> Conformity Assessment		
Building capacity for societal well-being, sustainable development and shared intergenerational prosperity:	Building capacity to conduct diagnostic testing for infectious diseases is key in detecting and mitigating their spread.	Strengthening capacity to foster the development and dissemination of sustainable eco-efficiency technologies and management practices, leading to shared intergenerational prosperity.
Training and skills development to accelerate capacity building and risk mitigation:	Training and skills in quality assurance and control in product testing, certification and inspection of medical and personal protection within short timeframes. As well as the expertise and capacity to develop new medicines, vaccines and related scientific testing to fight the virus. It is also essential to ensure that newly developed medicines are effective and safe for use without severe side effects.	Performance testing and verification bodies must be able to demonstrate the necessary capabilities with their areas of expertise and defined scope. Given the complexity of sustainability and resiliency goals, judgment as to whether an organization conforms with particular requirements requires assessment by individuals with sufficient technical expertise.
Conformity assessment to ensure that organizations are qualified and competent to function effectively and facilitate mutual recognition[2].	Conformity assessment and quality control of testing, certification and inspection activities are critical in the context of the global health crisis. Robust risk management processes are the best defense against errors and false results. The reliability and accuracy of laboratory results in medical settings is essential for correct diagnoses and positive clinical outcomes, so implementing measures to reduce the risk of errors is critical. Mutual recognition of testing results through conformity assessment allows foreign suppliers to rely on local service providers for quality assurance and compliance and thus, respond to demands in emergent situations by quickly expanding productive capacities.	Conformity assessment provides scientific and technical evidence of whether or not technologies, products and services - meet standards or other requirements; are fit and safe for humans, ecosystems and the environment; and are aligned, organized and managed in conformity with accepted good practices. Achieving global sustainability goals requires an extensive range of technologies and services. Many of the criteria to determine competence are technical in nature, requiring alternative arrangements to support and maintain the integrity of the conformity assessment process. ISO 17040 (General requirements for peer assessment of conformity assessment bodies and accreditation bodies) provides guidance on the requirements for peer assessment, which aligns well with the requirements of the ISO 14034 ETV standard.

[2] **Accreditation** supports the correct functioning of conformity assessment systems through a formal attestation of the integrity of competent bodies to perform specific activities. It provides a "credential" that designates a body as qualified and competent to provide conformity assessment services within a particular domain. International recognition of the accreditation is more likely if the accreditation body is a signatory to the mutual recognition arrangement of the International Laboratory Accreditation Cooperation (ILAC).

Essential Elements #3 Tools	Understanding Quality Systems in the Context of COVID-19 UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION From: "QUALITY & STANDARDS AND THEIR ROLE IN RESPONDING TO COVID-19" UNIDO, April 2020	Lessons for Achieving Global Sustainability and Resiliency VerifiGlobal
	**3. Tools to Act >> Benchmarking >> Best Practices >> Standardization**	
Benchmarking to establish baseline conditions on current and emerging issues, and their implications in order to understand and assess needs in priority areas where progress can be measured.	Acceptance of equivalence of standards among trade partners to mobilize medical resources globally and meet the soaring demands for medical equipment within a short time period.	Implementing stakeholder-driven performance benchmarking to ensure that sustainability performance criteria are appropriate to stakeholder needs and priorities. This requires establishing baseline conditions on current and emerging eco-efficiency and sustainability issues, and their implications.
Best Practices in developing and applying effective evidence-based decision support tools.	Enterprises that have quality management systems and best practices in place are better prepared to cope with the negative effects of the crisis. It is particularly important for health facilities to adhere to guidelines on bio-medical waste generated from quarantine health facilities to stop spread of infection.	Developing strategies to facilitate the adoption and use of technologies and related management practices which support sustainability objectives and address the needs and realities of stakeholders. This includes preparing guidelines on technology performance monitoring, verification and reporting, including the means to generate, store, retrieve and analyze relevant eco-efficiency and sustainability data.
Standardization distils and makes available expertise and knowledge regarding usability, quality, safety, performance and other characteristics required by users, buyers and producers. Standards contain technical specifications for products, product components and services. Applied by experienced professionals in specific fields, standards are knowledge repositories for processes, systems and best practices. Metrology ensures traceability of measurement results to internationally accepted references, providing the basis for comparability and global acceptance.	Standards help mitigate the negative effects of the global pandemic in multiple ways, including: Product standards for medical and protective equipment; Medical laboratory standards to evaluate the safety and efficacy of diagnostic tests and ensure that medical tests provide accurate and reliable results; Testing laboratory standards (e.g. ISO 17025) to ensure that product tests for medical equipment are correctly performed and provide reliable results; Standards for security, resilience, emergency and risk management; Health and safety standards reduce workplace risks and create better, safer working conditions; Food safety and hygiene management standards; Environmental and waste management standards (e.g. ISO 14000 series) for managing the increased waste caused by single-use protective equipment; Management standards (e.g. ISO 9001) for managing crisis situations and ensuring business continuity.	Standards ensure that technologies, products and services meet intended requirements. Harmonization of standards at the regional or global level increases accessibility to sustainable solutions. The development of an effective system for measuring and verifying sustainability can help improve the capacity within organizations to implement sustainable solutions. The significant benefits emerging from this include - Strengthening of policies, strategies and mechanisms for developing and demonstrating integrated approaches in addressing energy, environmental, economic and social issues; Removing barriers to the development and implementation of transparent performance benchmarks; Profiling sustainability success stories involving credible technology-based solutions; Identifying knowledge and information gaps requiring further research and development

Essential Elements #4 Effectiveness	Understanding Quality Systems in the Context of COVID-19 UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION From: "QUALITY & STANDARDS AND THEIR ROLE IN RESPONDING TO COVID-19" UNIDO, April 2020	Lessons for Achieving Global Sustainability and Resiliency VerifiGlobal
4. Effectiveness >> Innovation >> Entrepreneurship >> Investment		
Innovation offers new ideas and better solutions for addressing current and emerging needs	Innovative businesses worldwide have responded to COVID-19 with new ideas and have adjusted their manufacturing capabilities and production lines to produce products required to fight the global pandemic	Innovation is a key driver for achieving environmental sustainability, requiring businesses worldwide to adapt and adjust their production processes for greater resiliency.
Entrepreneurship provides the means to translate ideas into market reality	The private sector is directly affected by the measures taken to control the outbreak of the virus and is challenged to ensure business continuity. At the same time, business plays an essential role in mitigating the negative effects of the pandemic (e.g., through the production of required medical equipment and protective gear), while ensuring the health and safety of their workers.	Sustainable entrepreneurship involves: Demonstrating effective implementation of appropriate eco-efficiency applications; Optimizing the intrinsic strengths of existing infrastructure; Integrating renewable and decentralized options with conventional systems; Ensuring energy and resource security, resiliency and reliability; Measuring, tracking and benefitting from more efficient resource use.
Investment - Although a vast amount of information exists regarding technology applications and management practices, stakeholders are increasingly demanding clear, transparent reporting of performance information to assist them in making sound investment decisions.	Many businesses, particularly SMEs, are struggling to continue their operations. These enterprises must pay special attention to hygiene practices and occupational health and safety to protect their employees and prevent the spread of the disease at production facilities and offices. The development and application of business continuity plans has become increasingly important for investment, particularly in the context of global supply chains, which must ensure the continuous supply of essential goods, including food products.	Benchmarking and verifying the performance of programs, projects and technologies are important drivers for the development, deployment and successful adoption of sustainable solutions. Often, the missing element is a comprehensive approach for assessing sustainability to assist decision-makers in determining which technology options are most appropriate in meeting the needs and expectations of stakeholders. Governments should lead by example and ensure that procurement policies and procedures reflect sustainability objectives.

Innovative environmental technologies provide solutions that address specific environmental challenges such as:

Pollution prevention, control and remediation;

Efficient use of resources, including their recovery and recycling;

Climate change resiliency, adaptation and mitigation; and

Environmental monitoring and surveillance.

Environmental technology verification (ETV) provides a credible, impartial account of the performance of technologies which contribute to the attainment of environmental objectives through:

Specific, quantifiable environmental benefits (e.g., technologies with more beneficial or less adverse environmental impacts); or

Superior measurement of environmental impacts (e.g., environmental monitoring and surveillance technologies).

The ISO 14034 ETV process is particularly effective for verifying the performance of technologies whose innovative features or technical and/or environmental benefits are not fully reflected in existing product standards.

ISO 14034: Environmental Technology Verification (ETV)

VerifiGlobal

Global platform providing critical mass of comprehensive performance measurement and verification capability across multiple sectors and areas of technical expertise

- Streamlined process and quality assurance meeting the requirements of ISO 14034/17020/17025
- Greater potential for reciprocity and acceptance of test methods, performance data and verification results across multiple jurisdictions
- Flexibility of working with local experts and testing organizations, while benefiting from a comprehensive platform with global market reach

Determines market barriers to innovations, ensuring that performance measurement and verification activities are aligned to overcome them

- Greater capacity to help clients access strategic alliances, technology investment and project financing, thereby accelerating market adoption
- Effective communication and branding of high quality services provided by VerifiGlobal Alliance members

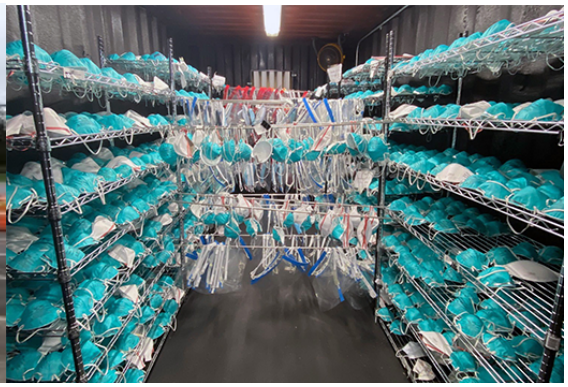
Battelle CCDS Critical Care Decontamination System™

"Making a difference in the world"

DELIVERING CRITICAL EQUIPMENT TO HOSPITAL SYSTEMS

The **Battelle CCDS Critical Care Decontamination System™** is a self-contained, mobile decontamination system that uses vapor phase hydrogen peroxide (VPHP) to decontaminate N95 respirator masks.

Battelle CCDS Critical Care Decontamination



Decontaminated N95 Masks at Mass. General Hospital

The **Battelle CCDS™** is designed to decontaminate up to 80,000 N95 respirators per day. The respirators are exposed to vapor phase hydrogen peroxide at the validated concentration level, rendering biological contaminants, including SARS-CoV-2, non-infectious.

The **Battelle CCDS** enables up to 20 reuses of N95 respirators without degrading filter performance, which helps address current personal protective equipment (PPE) shortages. The system is effective against both viral and bacterial agents.

Development of the **Battelle CCDS** draws on decades of research, culminating in a U.S. Food and Drug Administration (FDA) study that Battelle completed following a 2016 contagion. Battelle tested VPHP decontamination efficacy of the **Battelle CCDS** against SARS-CoV-2 in Battelle's Bio Safety Level 3 (BSL 3) laboratories.

Battelle received FDA Emergency Use Authorization for the **Battelle CCDS** in March of this year. On March 15, 2020, Battelle started building systems at one of its manufacturing operations in Columbus for shipment to sites around the U.S. The organization is currently conducting research to validate that other equipment, including surgical masks and ventilator components, can be decontaminated using this process.

The system is scalable and designed for fast deployment to add capacity and to meet demand. Respirator masks are tracked throughout the Battelle process with each hospital receiving back their own masks.

The Battelle CCDS™ Process

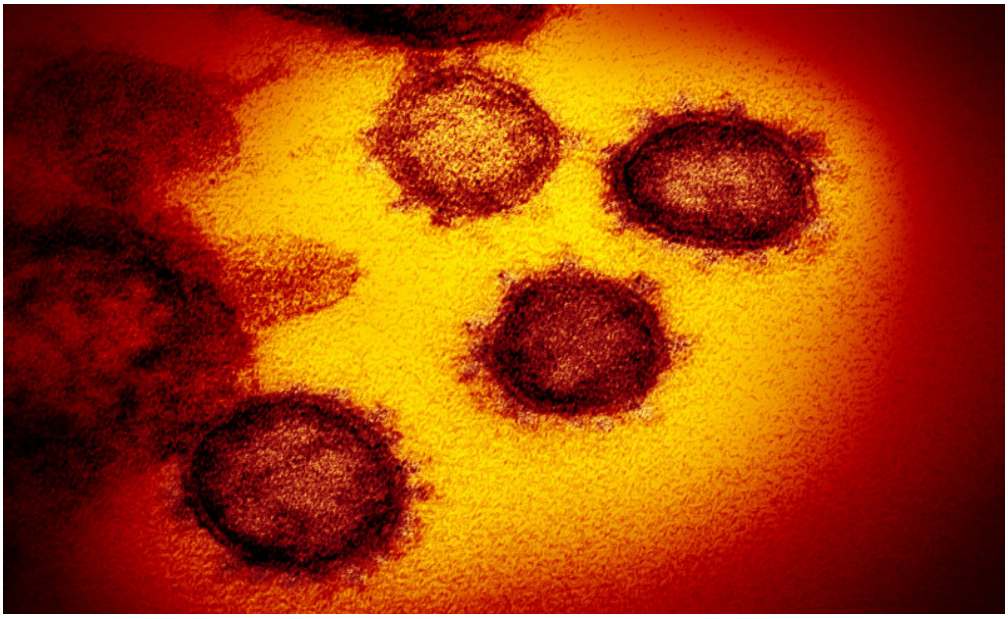
COLLECTION	RECEIPT	PROCESS	RETURN
• Health care centers label and collect PPE • PPE is double bagged and boxed • PPE is shipped to the decontamination location using commercial carrier	• Battelle receives and logs PPE into inventory database using barcodes • PPE is staged for decontamination	• Battelle loads PPE into decontamination chamber • PPE undergoes a decontamination cycle • PPE is sampled to ensure it is free of residual decontamination • PPE is packaged and staged for return	• PPE is returned to original customer via commercial carrier

The mission of Battelle is to translate scientific discovery and technology advances into societal benefit. Battelle succeeds by attracting, engaging, retaining and developing the best and brightest minds in their fields to work together to solve some of the world's most difficult challenges.

Battelle is the largest, private, non-profit research and development organization in the world. Headquartered in Columbus, Ohio since its founding in 1929, Battelle serves the national security, health and life sciences, and energy and environmental industries.

Battelle applies science and technology to solving what matters most. With major technology centers and national laboratories around the world, Battelle conducts research and development, designs and manufactures products, and delivers critical services for government and commercial customers.

For more information, visit: www.battelle.org/decon



OZONATOR NG-1000

"Making a difference in the world"

Ozone purifies and sanitizes the air we breathe, the water we drink, and food we eat. Ozone has remarkable antibacterial, anti-viral, and anti-fungal properties and is of particular value as a disinfectant. Ozone can effectively kill all pathogens including viruses, bacteria and fungi.

OZONATOR **NG-1000** in operation at Union Hospital in Terre Haute, Indiana

The ***OZONATOR*** **NG-1000** technology can be used as an on-site solution or as part of a regional operation to treat bio-hazardous and regulated medical waste. It uses ozone generated within the unit to treat the waste, employing an intelligent system of automated computer logic controls that are designed for maximum operator safety and convenience. Features include:

- Data-logging which records information such as the weight of each load and the origin of the waste; and
- A large industrial LCD touch-screen workstation to operate the unit, and through remote telemetry, allows facility staff to monitor all operations in real time.

The ***OZONATOR*** **NG-1000** eliminates the need for ancillary waste stream expenses such as special boxes, liners, handling, transportation and storage, reducing environmental impacts and waste management costs. The output from the unit is shredded, sterilized waste that has been reduced in volume by up to 90%. Any un-used ozone is converted back to harmless oxygen.

The ***OZONATOR*** **NG-1000** has been designed using best engineering practices and with safety being a priority at all facets of design and construction. The design allows all critical process parameters to be continuously monitored using closed loop control ensuring proper sequential processing. The DCS (Distributed Control System) is fault tolerant and fail safe should unplanned upsets arise.

The ***OZONATOR*** **NG-1000** also has a secondary containment chamber to ensure that no ozone escapes into the operating environment. Should a leak occur in the primary treatment chamber, any escaping ozone is held within the secondary containment chamber and is destroyed by the on-board Ozone Destruct Unit.

union HOSPITAL
A PARTNER IN THE UNION HOSPITAL HEALTH GROUP

*"**Union Hospital** has been using the **OZONATOR** for more than 12 years. Over that period of time more than 24 million pounds of bio-hazardous waste has been reduced by 85-90%. The simple and safe 'no touch' operation means reduced handling and less chance of exposure."*
Brian Herrington, Union Hospital Maintenance Department

The first ***OZONATOR*** **NG-1000** was installed in 2008 at Union Hospital in Terre Haute, Indiana, U.S.A. Union Hospital serves as a model of how a facility can manage the issues associated with bio-hazardous waste management and turn an environmental concern into a cost-savings opportunity. Since installing the ***OZONATOR*** **NG-1000**, Union Hospital has experienced safer operations and significant economic savings in the handling of its bio-hazardous waste stream.

OZONATOR INDUSTRIES
A CLEANER, SAFER ENVIRONMENT

Ozonator Industries is a private company owned by **Ozonator Environmental Solutions**, which holds the global registered patents for the ***OZONATOR*** **NG-1000** technology. The company specializes in the research, design and development of ozone-based technologies for sterilization and sanitation. The company also assembles, installs and commissions the technology at client sites.

The ***OZONATOR*** **NG-1000** is one of only a handful of accepted bio-hazard waste treatment technologies available. The ***OZONATOR*** **NG-1000** unit is manufactured in Canada in accordance with the requirements of ISO 9001.

The company's founder, Peter Klaptchuk, had a vison in the early 1990's about the clean and safe disposal of biomedical waste. He began research and development on this innovative technology in Regina, Saskatchewan in early 2001 and continued his work until the first ***OZONATOR*** **NG-1000** unit rolled of the assembly line in 2007/2008.

When installing the ***OZONATOR*** **NG-1000** at a client site, Andy Taylor (Peter's son) recalls looking over at Peter and see the biggest smile on one man's face that resonated the words: "*I did this and now we are making a difference in the world*".

Peter's vison was to always try and protect the very frontline people who handle this waste every day and run the risk of infection when not handled or disposed of properly.

For more information on the ***OZONATOR*** **NG-1000, contact:**
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U.S. ENVIRONMENTAL PROTECTION AGENCY
NEWS RELEASE
WWW.EPA.GOV/NEWSROOM

U.S. Environmental Protection Agency News Release – May 5, 2020

Long Island Scientist Wins EPA Advanced Septic System Nitrogen Sensor Challenge

NEW YORK (May 5, 2020) Today, the U.S. Environmental Protection Agency (EPA) announced that a scientist from Stony Brook University in Stony Brook, NY, has won the Advanced Septic System Nitrogen Sensor Challenge, an international competition to advance the development of low-cost sensors to measure nitrogen levels discharged from advanced home septic systems.

Dr. Qingzhi Zhu, with Stony Brook University and the New York State Center for Clean Water Technology earned the Challenge's prize of $50,000, the opportunity for commercialization support, eligibility for further testing and verification of the sensor technology's performance in accordance with the globally-recognized International Organization for Standardization (ISO) Environmental Technology Verification (ETV) 14034 standard.

See the full release at:
https://www.epa.gov/newsreleases/long-island-scientist-wins-epa-advanced-septic-system-nitrogen-sensor-challenge

For more information, contact:
Sonia Mohabir, (212) 637-3241, mohabir.sonia@epa.gov

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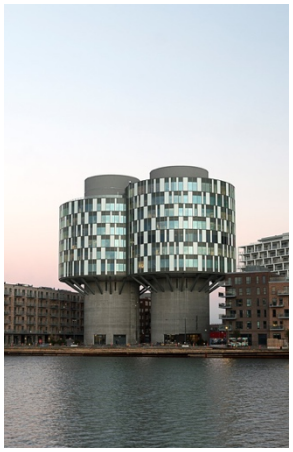
The VerifiGlobal Alliance is a global network of 13 organizations providing testing and verification services across multiple sectors and areas of expertise. Current member organizations are - Battelle (USA), CAWT (Canada), CMI (Australia), ETA-Danmark (Denmark), Eurofins (Finland), GHL (Canada), IETU (Poland), KTL (South Korea), MASSTC (USA), RESCOLL (France), Southern Research (USA), TRCA-STEP (Canada), 350Solutions (USA).

VerifiGlobal Alliance members demonstrate their conformity with the requirements of ISO 14034 and ISO 17020 through a peer assessment process designed in accordance with the requirements of ISO 17040.

Contact VerifiGlobal about joining the VerifiGlobal Alliance.

The VerifiGlobal Solutions Network is comprised of progressive, forward-looking companies with innovative technologies that have been independently verified in accordance with the ISO 14034 ETV standard and the VerifiGlobal Performance Verification Protocol.

Contact VerifiGlobal about independent verification of your technology performance claims.



The VerifiGlobal Forum has been established to engage with cooperative and supportive organizations that recognize the importance of innovative technology solutions to address global challenges and the value of independent quality-assured technology performance testing and verification.

Contact VerifiGlobal about participation in the VerifiGlobal Forum.

ETA-Danmark A/S, a subsidiary of Danish Standards, hosts the VerifiGlobal Secretariat.
Accredited by Danish Accreditation (DANAK) in accordance with ISO 17020, ETA-Danmark is the Danish verification body for both ISO 14034 ETV and the EU ETV Pilot Programme.
For information on ETA-Danmark, contact Thomas Bruun: tb@etadanmark.dk

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