HealthManagement.org
The Journal
LEADERSHIP • CROSS-COLLABORATION • WINNING PRACTICES
VOLUME 20 • ISSUE 10 • 2020 • € 22
ISSN = 1377-7629

Cover Story

# Chained Globalisation

# Playing Our Part – How Clinical Laboratories Can Build a Cleaner, More Sustainable Future

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An overview of the impact the healthcare industry has on the environment and how the adoption of an Environmental Management System according to ISO standards can provide a framework for a more sustainable operating model for clinical laboratories.

As the healthcare industry continues to grow, so does its effect on the environment. As a sector which exists to promote longer, healthier lives, the subject of environmental impact, and its related health consequences, carries extra significance. Whilst there are many sectors which are more closely associated with the acceleration of climate change, such as energy, agriculture and fashion, healthcare currently accounts for 4.4% (Karliner et al. 2019) of worldwide net carbon emissions. It is therefore the responsibility of all stakeholders within the sector to consider how to embrace more environmentally responsible practices while maintaining standards of care quality and safety.

The healthcare sector has already taken steps to better define how such improvements can be realised. The voluntary adoption of an Environmental Management System (EMS) according to the International Standards ISO 14001 or EMAS (Eco Management and Audit Scheme), provide a framework for a more sustainable operating model. Adopting such measures can help to ensure regulatory compliance and enhance a hospital's reputation as a progressive and forward-looking organisation. EMS adoption also offers potential commercial advantages by reducing the risk of government-imposed fines, lowering energy consumption, improving resource efficiency, and optimising waste management processes. The cumulative effects of these measures can therefore deliver substantial overall competitive advantages.

However the implementation of effective and permanent operational change in any large organisation cannot succeed without a unified and committed senior management team. It is beholden on the organisation's leaders to fund and facilitate the necessary training and development to adopt new practices, and foster a culture in which new thinking can be embraced, feedback can be openly expressed, and communication is clear and effective (Waxin et al. 2019). It is also vital that staff are regularly made aware of the cumulative positive effects of their efforts.

## First Steps

Implementing an EMS is a similar undertaking to introducing any other quality system, albeit with a consistent emphasis on environmental factors. A laboratory may choose to seek certification under the ISO 14000 standard for environmental management. There is also a need to assess and understand both national and local statutory requirements, and legislation pertinent to a specific product or service. These can include the disposal of dangerous goods, licensing to discharge waste into sewers, and compliance with building regulations.

A recommended first step for laboratories is to set clear and achievable environmental targets. These may include a reduction in energy and water consumption, a reduction in consumables, and a reduction in waste products. Where possible, recycling guidelines should also be published and enforced. A typical and highly effective means to promote such changes is a Plan-Do-Check-Act approach. A final, but potentially highly impactful step in the process is the engagement of partners and other stakeholders to adopt similar policies and commitments.

Environmental improvement should be based on the concept to reduce, reuse and recycle. A green purchasing policy for equipment, laboratory furniture, reagents, and management of packaging wastes may be introduced for instance.

A green purchasing policy for equipment, laboratory furniture, reagents, management of packaging wastes may also considerably reduce a lab's overall environmental impact. This involves the selection and acquisition of products and services which reduce environmental impacts over their life-cycle of manufacturing, transportation, packaging, ordering patterns, use and recycling or disposal. It is essentially a commitment on the part of the laboratory to buying recyclable, recycled, more efficient, less toxic, and locally produced products whenever it is feasible.

## Enhance Environmental Practices

In pursuit of such a strategy, the adoption of analysers with a reduced or even zero water requirement should be considered. The supply and treatment of water represents a significant proportion of the environmental impact of a laboratory. Equipment selection should therefore take into account the potentially contaminated wastewater from analysers, as well as expensive and wasteful deionised water. Switching to a

lean and efficient automated laboratory system may present a further opportunity to enhance environmental practices, since it may lead to a reduction of testing material and waste.

Whilst each of these initiatives may seem relatively small, the transition to a more sustainable operating model must be thought of as an aggregation of marginal gains, leading to a substantial overall impact. This can only be achieved if each member of the organisation is aligned with the goal, and committed to it. In reducing the impact of laboratory waste, the key principle is that no activity should begin until a robust plan for the disposal of both hazardous and non-hazardous waste has been determined. This will ensure that all of the applicable regional and national requirements covering the handling of waste have been met, and any unplanned issues and related charges are minimised. This could include the generation of a form of waste, such as chemical or biological, which the institution is not equipped to deal with.

An example of such difficulty laboratories can encounter when dealing with management of wastewater discharge to the sewage is given by the recent implementation of REACH Regulation 1907/2006 (ECHA) on placement of OPE (commonly used detergent in laboratories; commercially known as Triton X-100) and NPE (commonly used detergents in laboratories) substances on the Authorization List. Formal decisions regarding the ECHA authorisation process and allowances of IVDs containing Triton-type detergents will be taken in the coming weeks; however, the Draft Opinions prepared by the Risk Assessment Committee (RAC) & Socioeconomic Assessment Committee (SEAC) in regard to the majority of the applications by a number of IVD companies state that "all solid and liquid waste shall be collected for adequate treatment. The treatment shall minimise releases to environmental compartments as far as technically and practically possible. Release into the sewer system or to surface waters is not adequate treatment". As there is currently no known treatment technology proven to effectively remove dilute concentrations of OPE and NPE from the wastewater generated from reagents used upon IVD instrument platforms, this implies that EU healthcare systems and diagnostic laboratories should collect and incinerate all their wastewater (reference: Information sheet issued by European Federation of Clinical Chemistry and Laboratory Medicine sent on September 3, 2020 to all EFLM Academy members).

## Environmental Footprint

Today, very few clinical laboratories have made the important step to ISO 14001 certification. Despite the growing global focus on building a cleaner and more sustainable future, most laboratories have yet to formulate plans to reduce their impact on the environment. What is certain is that, as with all other sectors, the healthcare industry will eventually be held to account for its environmental footprint, both by Governments and regulators, and by the media and the public. It is imperative that leadership teams in hospitals and labs consider this not only as a critical matter of corporate social responsibility, but also as an opportunity for long-term cost savings (Lopez and Badrick 2012).

A huge amount is at stake. Healthcare represents 10% of the global economy, so the potential to transform it into a cleaner, more sustainable and lower carbon industry is critical to global targets. When combined with the healthcare industry's worldwide political influence, there is a real opportunity to provide powerful leadership towards a low-carbon, climate-smart, more equitable, and healthier future (noharm-global.org).

It has long been a central to the culture of Ortho Clinical Diagnostics to work in harmony with our environment, and to ensure that we incorporate effective sustainability practices into everything we do. This belief goes hand-in-hand with our purpose of improving and saving lives. We are committed to policies and practices that support the environmental health of the communities in which we operate and the sustainability of the planet and its finite resources. Throughout our operations we seek every opportunity to reduce our waste and lower our energy consumption, including the production of clean, renewable energy at a number of our global facilities. We also carefully plan and analyse our product manufacturing and packaging processes to ensure that the most efficient and environmentally friendly methods are incorporated. In addition, Ortho Clinical Diagnostics endeavours consistently to lower its environmental footprint by designing technology and systems with the highest operational efficiency and therefore the lowest impact on the earth and its resources

## Time to Act is Now

It is no secret that the world is at a critical inflection point. We must confront and change the habits that have brought the planet's delicate environmental balance to the brink. Our sector undoubtedly has a crucial role to play, and whilst we have made a start, there is much to do. Throughout history, innovation and discovery have been central to advances in medical care. It is now time to apply these talents to re-thinking how our industry operates, and where it can improve. There simply is no 'do nothing' option. It is time to act. ■

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