



Health Considerations for a New Project

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Introduction

There is often uncertainty about the very involvement, role and responsibilities of occupational health practitioners in projects and an even greater uncertainty about the scope of such involvement.

This article attempts to introduce a perspective that, hopefully, clarifies matters somewhat. It covers three areas, namely:

- **Role and responsibility of occupational health in projects:** the circumstances and boundaries within which occupational health functions;
- **Motivation for involving occupational health in projects:** why health aspects need to be considered in projects; and
- **Methodology for health requirements on projects:** aspects of the methodology for considering, prescribing and monitoring compliance to health requirements on projects.

From a health point of view, projects can be divided into two categories, namely: projects where physical structures are constructed or replaced, vs. where it is not (business systems related projects, etc.). Only the former is relevant to the contents of this article.

Physical project location plays an important part, due to infrastructure challenges that remote locations present and the influence of health risks that are surrounding-area specific, but may impact on the project site.

Project health stakeholders are defined as anybody that functions on the site of the project, people in immediately surroundings, as well as more distant communities that may be affected by the physical presence and activities of the project. Stakeholders also include people, at whatever location, that are related to, or otherwise closely connected to, project execution personnel.

Role and responsibility of occupational health in projects

Whereas occupational health is a specialist area of medicine, health in projects is, in turn, a defined specific area of occupational health. Occupational health practitioners include doctors, nurses, ergonomists, hygienists and medical emergency responders. The term 'health' refers to and incorporates occupational, environmental and public health.

It is justified to question the reason for health considerations and involvement in a project beyond what is already captured and prescribed by legislation. The answer is that the law provides minimum requirements and quality frameworks for occupational health to function in, but if the health of all stakeholders is to be effectively managed, each project should be approached individually. Legal compliance should be minimum requirements from where value adding should start, but should never be the primary objective.

In projects, the value of occupational health, and the very reason for its existence in the projects environment, lies in the proactivity that it introduces by influencing design and creation of a workplace where the source and root cause of factors that form health hazards is purposefully avoided during design and construction. The traditional, or reactive, 'sick bay' function of health is of secondary value. A healthy workplace is thus designed and constructed, and it is the place of occupational health to influence the establishment thereof. Treatment of injuries and disease is a secondary aim – the primary aim is not having to treat. The presence of injury or work-related disease is thus how a failure of occupational health manifests.

The emphasis from an industry perspective, during design and operation, is on system efficiency and maximum yield of product. The expectation from the human side, particularly as far as employees and stakeholders potentially exposed to the detrimental side effects of industry, is on a sustainable compatibility between these two entities: industry and mankind. The seeming paradox of people wanting more, and more sophisticated, products whilst increasingly being intolerant towards the side effect potential that it carries, is the milieu that occupational health functions within.

In the context of projects, the primary value and opportunity for occupational health lies firmly in the pro-activity of aiming towards establishment of a safer and healthier workplace by eliminating and/or attenuating risk at source, rather than aiming at more effective treatment of side effects like diseases and injuries. It is for this reason that early involvement of occupational health in a project, i.e. at the prefeasibility stage, is imperative.

The two main pillars of occupational health involvement in projects are:

- Influencing of process, equipment and structural design; and
- Health risk assessment and governance of measures to address the risks.

Motivation for involving occupational health in projects

So why do we need to practice structured and project-specific occupational health in projects? This can be summarised as follows:

- **Health risk management:** to facilitate and enhance risk management for the project owner about the health impacts of a project by identification, managing and advising on health risks and the implications thereof during the life-cycle of the project;
- **Legal compliance:** to facilitate adherence to all relevant legislation, nationally and internationally, depending on the country in which the project will be executed;
- **Responsible care:** to contribute towards protecting the lives and health of all stakeholders of the project;
- **Directives and guidelines:** to provide directives and guidelines as to the legal, health and technical requirements necessary to eliminate or minimise exposure of stakeholders to products from a project and therefore also to the effects resulting from that;
- **Reactive and curative response:** to provide a reactive and curative service in the form of injury handling and infectious disease management, and
- **Cost saving:** Correct involvement of occupational health in projects stretches way beyond providing a reactive, injury handling facility which, although very important, is not at all the most valuable contribution to the project's life cycle that occupational health can or should make. The principle of prevention being the correct and most cost-effective approach ("prevention is the cure") is not only universally accepted, but also entrenched in the law. Although difficult to quantify, studies have suggested that the financial return on prevention measures is 1.35-2.53:1 (De Greef et al, 2015).

Methodology for health requirements on projects

Three aspects of the methodology for health requirements on projects will be introduced and discussed, namely:

- Project health and design philosophy;
- Project health risk assessment; and
- Project health specifications for construction.

It is essential to consider health requirements on projects from early in the project life-cycle for maximum benefit. The ideal timing to consider the above three aspects, as well as monitoring and auditing the occupational health performance, is illustrated on a typical stage-gate model in Figure 1.

Each of these is discussed in more detail below.

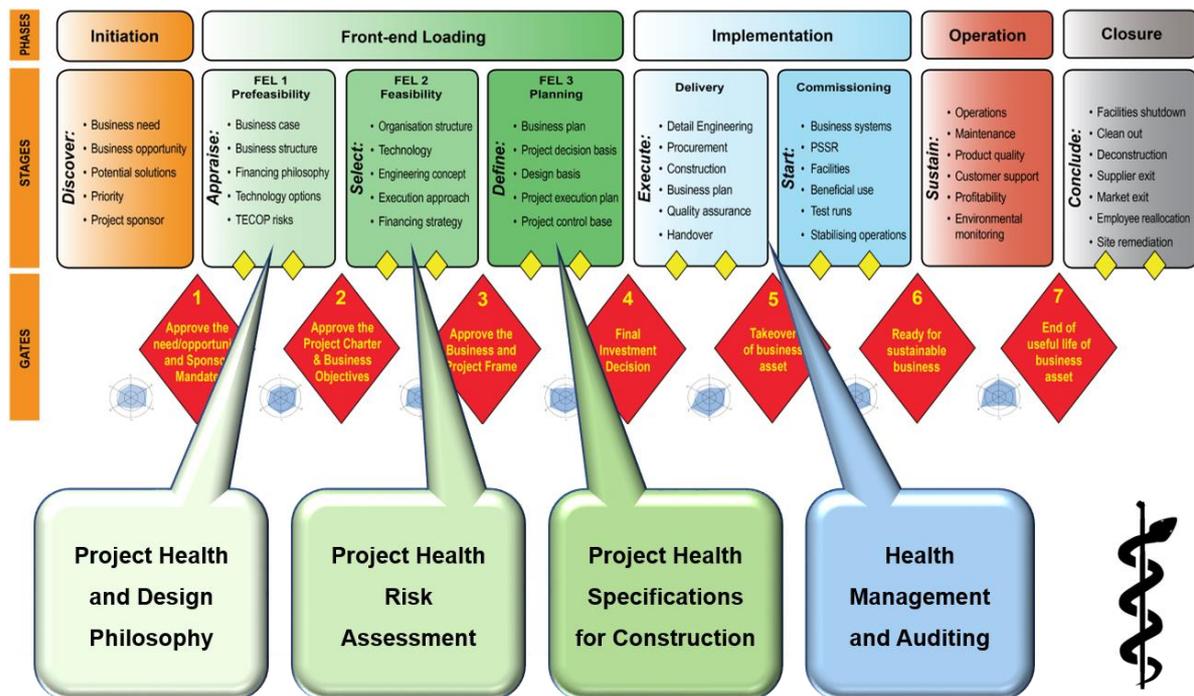


Figure 1: Timing of the health deliverables during project life-cycle

Project Health and Design Philosophy

Health involvement in a project is for the life-cycle of the project, rather than limited to the project execution stage. The entry point for involvement of occupational health in projects is the prefeasibility stage and it takes the form of a project health and design philosophy. By necessity, this will be generic to a fair degree at this stage, only to become more specific as project planning progresses and more information becomes available. The purpose of a project health philosophy at this stage is to allow the project owner to consider what the health implications of the proposed project will be in the process of determining the feasibility of it.

The objective of a project health and design philosophy is to strive towards influencing design of structures, equipment and procedures to eliminate root causes of factors that could, or will, have detrimental effects on stakeholder health.

Best practices as far as structural, procedural and behavioural/ managerial actions and procedures will be incorporated in the philosophy. This includes best practices for conditions and operations prevailing during the full life-cycle of the project, but not yet recorded in standard operating procedures or other documentation.

Guiding principles for a project health philosophy are as follows:

- Appropriate health risk management measures cannot be prescribed and implemented before a proper health risk assessment has been done;

- A health risk assessment is a stand-alone process and is not replaced or addressed by any other risk assessment e.g. safety or environmental assessments;
- Designing an inherently safe and healthy workplace is preferred above the protection of employees by means of personal protective equipment (PPE);
- Modifying or replacing existing equipment to conform to health standards is usually very expensive and therefore it makes good business sense to ensure that occupational health requirements are incorporated into the initial design of new plants and/or equipment; and
- The project health management system links with existing site occupational health systems and in the case of green field projects is the precursor of future plants' occupational health systems. It must align with owner standards for occupational health matters.

Health motivated influences on design and facility provision link to several aspects. The common purpose is to minimise or avoid health risk at source. Many of these aspects are specifically governed or mentioned in legislation, but some are dictated by knowledge that exists in the broader field of occupational health. Suggestions to influence design and facility provision should be provided to project management teams and it should aim, as part of the practice of occupational health in projects, to have these requirements included into company quality management standards to ensure compliance thereto.

A future Insight Article will address the contents of the project health and design philosophy in more detail.

Project Health Risk Assessment

As planning progresses and the project realises, health considerations become more defined, requiring more structured evaluation of health risks. This takes the form of a health risk assessment. This is still qualitative rather than quantitative, since risks are foreseen and the degree thereof estimated.

A health risk assessment consists of two distinct phases:

- **Identification and qualification of health hazards:** This covers project specific hazard identification in five categories namely physical (noise, lighting, dust, vibration), chemical, ergonomic, biological and psychosocial health risks. This is followed by exposure assessment during which the likely duration of exposure, the degree/concentration at which exposure could take place, the medium in which the hazard exists (air, water, food and waves as in light, sound and radiation) and the exposure route (inhalation, ingestion and dermal absorption) is determined. Dose–response reaction is estimated by considering the information gained as described above. This first phase deals with possibilities and potential of harm

- **Interpretation of the information gathered:** This phase deals with probabilities, rather than possibilities. It considers the probability of the potential for adverse health effects of the hazards materialising and from that, the health risk of the project is determined. Whereas the first phase follows, at large, standardised methodologies of measurement and then literature review, the second phase interprets and contextualises. This requires expert health input to integrate the information with the context in which the health hazards can or will occur. Health hazards are then ranked and total health risk determined.

Project health specifications for construction

At completion of the health risk assessment, the next step is to compile project-specific specifications and measures to address the health risk that the project carries. It is based on the results of the health risk assessment and includes some statutory requirements.

Some of the topics that health specifications should encompass, include:

- a health policy (legal requirement);
- health hazard identification, evaluation and control by independent employers like contractor companies working on the project;
- material safety data sheets;
- labelling and storage of chemicals;
- personal protective equipment (PPE) – project and task specific;
- health information and training;
- medical surveillance which includes pre-employment, periodical and exit medical requirements and standards;
- emergency medical management including single and multiple case evacuation;
- intra-company and statutory reporting of occupational injuries and diseases, as well as of highly infectious diseases and record keeping thereof;
- health inspections frequency, scope, reporting and deviation remedy;
- health care facilities extent, type and capacity including staff type, number and qualification, drugs types and quantity, equipment type and level, including X-ray facility specifications, ambulances and reserve availability;
- details of execution, standard and procedure of health policies and contingency measures mentioned (malaria, infectious disease);
- project specific hygiene facility specifications;
- cigarette smoking and demarcated smoking areas;
- level and project-specific type of recreation and communication facilities; and

- an occupational health system for the construction phase of the project which includes practice of primary health (injuries, ailments, disease and stress management programmes).

Construction and commissioning

All the actions and activities described above take place during the planning phases of a project. It is imperative that the health specifications for construction be included in documentation requesting quotation from prospective contractor companies. This is so that all prospective contractors as well as owner project management personnel can consider cost, time, resource and quality level implications of these requirements and factor these in when submitting quotations. To ensure alignment, occupational health personnel participate in bid clarification and allocation meetings.

Health audits to ensure compliance to supplied health specifications and requirements are performed during construction. This is done by suitably experienced and qualified occupational health personnel. The objective is to ensure availability of required resources and a commitment from project management to correct non-compliances. Health monitoring during construction cannot be allocated to resources from other disciplines like occupational safety, environmental management or project management for reasons of quality assurance and lack of in-depth health knowledge.

Towards the end of construction, an important health consideration is whether the project is handed to its owners in such a way that operations can be commissioned and conducted over the rest of the project's life-cycle without adversely affecting health in any stakeholder. The decision is made by occupational health after review of construction audit reports, final inspection and a new health risk assessment of the facility, performed by an Approved Inspection Authority, as dictated by law. The result of this risk assessment provides information, based on which protective measures and equipment is prescribed and incorporated into standard operating procedures, as well as systems by which occupational health is conducted in the operational facility.

Concluding remarks

Depending on how it is approached and conducted, Occupational Health can either play an invaluable and cost-effective role in the project environment, both during execution and the total life cycle period of the project or a cost-ineffective, reactive curative role. The former should be actively pursued, and insisted on, by project owners and project management teams.

References

De Greef, M., Van den Broek, K. & Wlodarski, O., 2015, *Return on prevention - cost-benefit analysis of prevention measures for business travellers and international assignees*. International SOS Foundation.