

Myanmar National Environmental Quality Effluent / Emission Guidelines

Iain Watson

Senior Environmental Safeguards Specialist

ADB Greater Mekong Subregion
Environment Operations Center

Scope of Myanmar Environmental Quality Guidelines and Standards



As required in Environmental Conservation Law:

- Surface water quality in rivers, streams, canals, springs, marshes, swamps, lakes reservoirs and other inland water sources of the public
- Water quality for coastal and estuarine areas
- Underground water quality
- Noise and vibration
- **Effluent**
- **Emissions**
- Solid waste
- Others as stipulated by the Union Government

Types of Environmental Quality Guidelines / Standards



- **Emission guidelines** set maximum amounts of a pollutant **discharged or released** by an industrial plant, or other source
- They are typically expressed as **concentrations**, although there is increasing use of **load-based guidelines**, which reflect more directly the overall objective of reducing the total load on the environment
- Emissions guidelines may be established in terms of what can be achieved with **available technology** or in terms of the impacts of effluent discharges or air emissions on the ambient environment
- Technology-based guidelines are based on knowledge of **what can be achieved with current equipment and practices**

Current Myanmar EQG

- Ambient guidelines
 - Air quality
 - **Drinking water quality**
 - Ambient water quality (protection of aquatic life)
 - Groundwater quality
 - Soil and sediment quality
 - Noise quality (ambient and other places such as quiet areas)
- **Draft emissions guidelines**
 - **Air emissions**
 - **Solid waste**
 - **Noise levels**
 - **Odor**
 - **Industry-specific effluent and emissions**

IFC Performance Standards and EHS Guidelines



- The International Finance Corporation (the private sector funding arm of the World Bank Group) and more generally the World Bank, has taken a leading role over the last 15 years in developing environmental and pollution control guidance applicable by **private enterprise in developing countries**
- IFC standards and guidelines have been progressively updated and expanded and are now **generally accepted as international good practice** for application in developing countries, augmenting multilateral development bank (e.g. ADB) and national safeguard requirements

IFC Performance Standard 3



Resource Efficiency and Pollution Prevention

Objectives:

- **To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities**
- To promote more sustainable use of resources, including energy and water
- To reduce project-related greenhouse gas emissions

Environmental, Health, and Safety Guidelines



- The EHS Guidelines are **technical reference documents** with general and industry-specific examples of Good International Industry Practice
- General EHS Guidelines are designed to be used together with the **relevant Industry Sector EHS Guidelines** to ensure project achievement of Performance Standards
- Industry guidelines consider sector-specific risks / impacts and their prevention, performance indicators (e.g. emissions / effluents, input and/or output-based indicators such as energy, water, waste), and integration of environmental plus occupational health and safety

General Environmental, Health, and Safety



- **Air Emissions.** Projects with significant sources of air emissions, and potential for significant impacts to ambient air quality, should prevent or minimize impacts by ensuring that:
 - **Emissions do not result in pollution concentrations that reach or exceed ambient quality guidelines** or standards, or in their absence current WHO air quality guidelines; and
 - **Emissions do not contribute a significant portion of the attainment of relevant ambient air quality guidelines** or standards (i.e. not exceeding 25% of the applicable guidelines or standards) to allow additional, future sustainable development in the same air shed

General Environmental, Health, and Safety (Cont'd)



- **Noise Levels.** Noise prevention and mitigation measures should be applied where predicted or measured noise impacts from a project facility or operations exceed the applicable noise level guideline at the most sensitive point of reception
- **Odor.** Point and diffuse source odors should be minimized using available prevention and control techniques to ensure that odors that are offensive or unacceptable to neighbors do not occur

Industry Sector Guidelines



- **Forestry** x 4 (e.g. board products, pulp and paper mills)
- **Agribusiness / Food Production** x 13 (e.g. poultry production, plantation crop production, meat processing, food and beverage processing, breweries)
- **Chemicals** x 11 (e.g. pharmaceuticals manufacturing, fertilizer manufacturing, petroleum refining)
- **Oil and Gas** x 3 (e.g. onshore/offshore development, liquefied natural gas facilities)
- **Infrastructure** x 14 (e.g. tourism development, ports / harbors / terminals, railways, toll roads, health care facilities, waste management facilities)
- **General Manufacturing** x 12 (e.g. cement manufacturing, glass manufacturing, electronics manufacturing, printing)
- **Mining**
- **Power** x 4 (e.g. wind energy, electric power transmission and distribution); not yet hydropower generation

Effluent Levels – Wood Treatment and Preservation

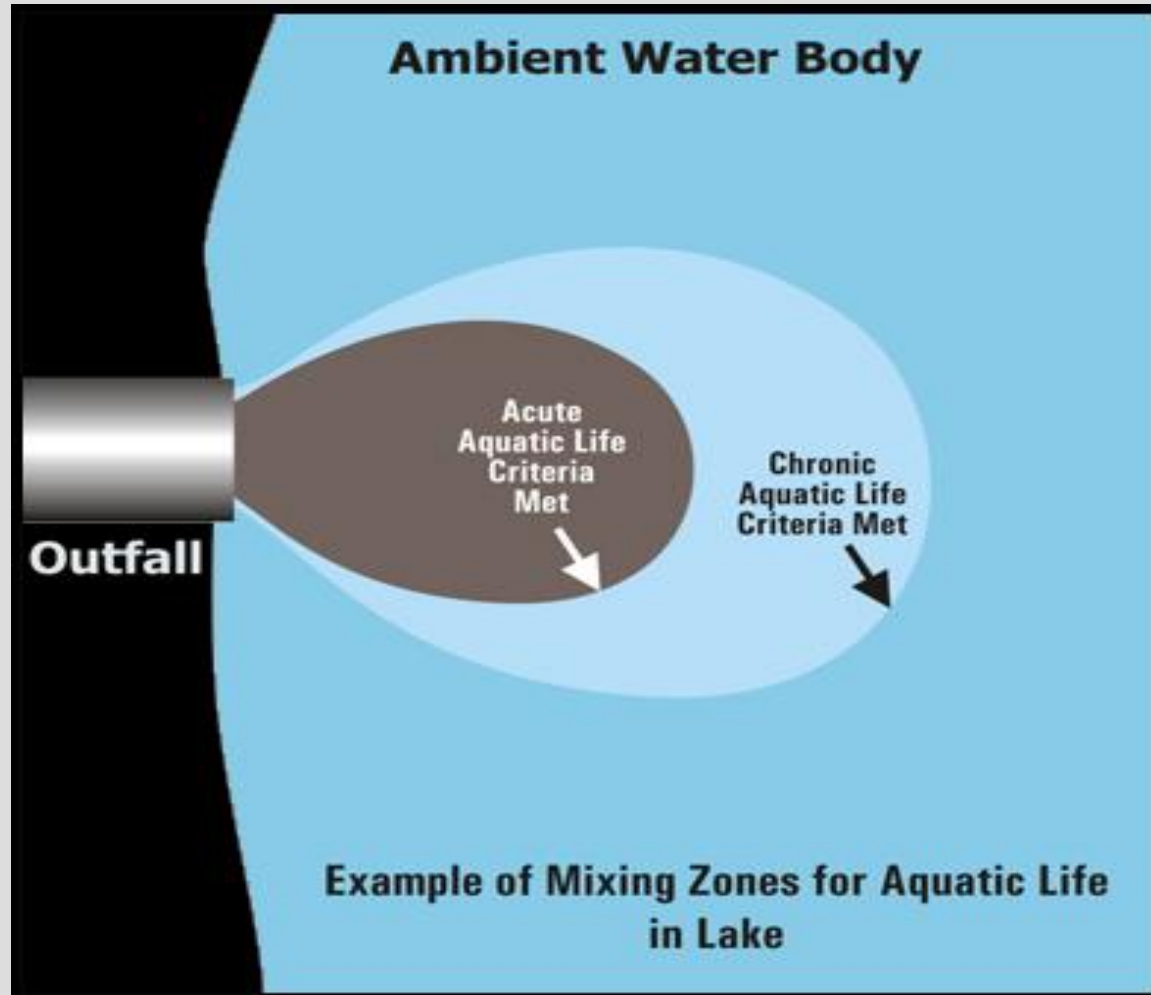


Parameter	Unit	Guideline Value
5-day BOD	mg/L	50
Arsenic	mg/L	0.1
COD	mg/L	150
Chromium (total)	mg/L	0.5
Chromium (hexavalent)	mg/L	0.1
Copper	mg/L	0.5
Fluoride	mg/L	5
Oil and grease	mg/L	10
Pesticides (each)	mg/L	0.05
pH	S.U.	6-9
Phenols	mg/L	0.5
Dioxins / Furans	mg/L	0.1
PAH	mg/L	0.05
Temperature increase	°C	<3^b
Total suspended solids	mg/L	50

Point of Compliance – Pipe End Effluent and Stack Emissions



Point of Compliance – Mixing Zones



Changes to January 2015 EQEG (1)



- Clarified that the guidelines are primarily intended to apply to projects and activities subject to EIA Procedure, and at MOECAAF discretion to smaller projects and activities
- Clarified that full IFC EHS general and industry-specific guidelines should be consulted for recommendations on controlling and treating effluent and air emissions
- Revised and added to definitions under general provisions (e.g. adding biological and pathogenic to 'concentration', deleted political from 'project')
- Clarified that guidelines are applicable at point of discharge (i.e. stack, pipe) unless otherwise indicated (e.g. temperature at edge of an initial dilution zone)

Changes to January 2015 EQEG (2)

- Provided full referencing for applicable IFC EHS guidelines and other (e.g. WHO)
- Added list of abbreviations and terms (e.g. S.U., PM10) for each table, will later add a summary table as appendix
- Deleted general effluent levels guidance values to avoid confusion regarding applicability of general and industry-specific guidelines are applicable; industry guidelines **always apply** and may in turn specify that general (e.g. air, noise) additionally apply
- Added WHO ambient air quality guidelines under general guidelines plus dichloromethane; need to decide whether to expand list of parameters to reflect entire WHO air quality guidelines

Changes to January 2015 EQEG (3)

- Adjusted noise guideline to reflect different times for public holidays
- Added odor under general provisions but industry-specific will depend on the type and location (i.e. proximity to settlements) and nature of odors from an industry (i.e. strength, unpleasantness)
- Clarified that industry-specific guidelines are for general application and will need to be revised on a case-by-case basis depending on the type of industry operation (e.g. mining); avoid being overly-prescriptive and requiring long lists of parameters not applicable to a particular facility or operation
- Added explanation where necessary on specific activities each guideline applies to (e.g. airlines includes aircraft maintenance facilities)

Changes to January 2015 EQEG (4)



- Added specific guideline for centralized wastewater treatment plant, and expanded list of parameters; differentiated for other guidelines application of limit values for effluent, storm water, and sanitary water discharges
- Added guideline for sludge disposal from wastewater treatment plants
- Added guideline for incineration
- Summarized applicable limit values for industry specific guideline (e.g. railways, airlines, roads, retail petroleum networks, wind energy) rather than narrative statement, and avoided cross-referencing to other industry guideline

Changes to January 2015 EQEG (5)



- Have added suggested parameters to extent possible (e.g. chlorine used in cleaning processes has been added to the fish processing guideline)
- Removed toxicity testing as not yet widely available even in neighboring countries but kept TEQ which have already been established (WHO, 2005) for human and animal toxicity (i.e. just need to multiply chemical mass by the applicable TEQ)
- Have deleted activities such as shipping which are not covered by EIA Procedure but may restore since this guideline also applies to ship maintenance

Changes Not Accomplished (1)

- Have not reduced list of parameters for any guideline; recognize limited analytical laboratory capacity in Myanmar but all analyses readily available in neighboring countries
- Not all industry-specific guidelines include air emission levels, reflecting absent or low anticipated emissions
- Have left unchanged reference to MARPOL since the guideline for offshore and onshore oil and gas development specify that these relate to ship operations and therefore MARPOL is most appropriate
- Aquaculture guideline left unchanged since the guideline already takes into account high nutrient loads associated with aquaculture operations

Changes Not Accomplished (2)

- Have not added limit values for active ingredients and antibiotics (e.g. livestock production) since these would need to be set on a case-by-case basis
- Clarified that applicable parameters for pharmaceutical and biotechnology manufacturing will depend on type of operation
- Adjusted limit values for food processing, breweries, distilleries to ensure consistency, and increased COD value for breweries and distilleries; reference for separate guideline for distilleries not found



Possible Additional Content (1)

- Adding parameters (e.g. sodium, potassium) for crop production guideline; what should be limit value?
- Adding guidelines for all solid and hazardous wastes generated by projects and activities
- Considering air emissions from project-level power generation
- Adding mercury parameter for natural gas processing; what should be limit value?
- Adding water soluble protein for fish processing effluent levels; what should be limit value?
- Adding nitrogen, phosphorus, and potassium for phosphate fertilizer manufacturing air emissions; what should be limit values?



Possible Additional Content (2)

- Adding guideline for laboratories (e.g. chemical and biological) other than those included under health care facilities
- Continue aligning EQG with IFC and EIA Procedure Annex 1 categories; some small industries do not obviously fit or required parameters should be reduced
- Adding hyperlinks to references in final version to simply access
- Indicating standard chemical compound numbering according to Chemical Abstracts Service (CAS); as appendix
- Compiling standard analytical methods for each parameter, for reference purposes; as appendix

Thank you

iain@gms-eoc.org
www.gms-eoc.org