

Principles and guidelines for the spaceflight regulator in assessing ALARP and acceptable risk

CAP 2220

1. Introduction

Before granting either a launch operator licence, return operator licence or spaceport licence, the spaceflight regulator must be satisfied that applicant has taken all reasonable steps to ensure the health and safety risks arising from their activities are as low as reasonably practicable (ALARP)¹. The applicant will make a demonstration of ALARP within the safety case required as part of the application process.

The regulator must also determine whether the residual risk is acceptable when considering the siting assessment for the spaceport² and the risks from the launch operator's spaceflight activities to persons who are not on board the launch vehicle and their property³.

The aim of this guidance is to support consistent and transparent decision-making by the regulator's staff by setting out the principles that underpin the regulator's view on acceptable levels of residual risk, and providing guidelines on judging whether a licence applicant has met the requirements to reduce risks to ALARP. The guidance does not apply to the risk assessment for human participants under section 9(2) of the Space Industry Act (the Act), or in-orbit risk (e.g. risk of collisions)⁴.

ALARP is a fundamental concept in UK health and safety law. Alongside the requirements in the Act it applies to all activities within the scope of the Health and Safety at Work etc. Act 1974 (HSWA). It is widely adopted within engineering good practice and across many sectors as a proportionate approach to safety risk management. To ensure a consistent and proportionate approach in making judgements on ALARP, this guidance draws extensively on existing published material and should be read in conjunction with [Reducing Risks: Protecting People](#) and the [ALARP suite of guidance available on the HSE website](#). This document should also be read alongside the Space Industry Regulations and accompanying guidance, which set out the legal requirements in more detail.

2. Risk Acceptability - Principles to consider when determining when risk is “acceptable to the regulator”

There are four factors which the regulator will need to take into account when determining whether the level of risk is acceptable: policy goals, legal principles, comparisons with other sectors and public concern. Figure 1 sets these out in more detail.

¹ Space Industry Act 2018 section 9(4)(a) and section (10)

² Space Industry Regulations 2020 regulation 41(3)

³ Space Industry Act 2018 section 9(4)(b)

⁴ Note that this document is focused on decision-making around launch (and return) operator and spaceport licences under the Act; it does not apply to orbital operator licences, for which different considerations around risk need to be made. See the guidance for orbital operator licence applications for further information.



Figure 1 - Factors to be considered when determining risk acceptability

This framework leads to six principles which form the basis of the regulator's decision-making process for determining if the risk is acceptable. It is recognised that the relative importance of these principles (and the supporting evidence) may vary over time and they will be kept under review.

Policy goals

Principle 1 - The regulator must be satisfied the applicant has taken all reasonable measures to ensure that the relevant risks from their operations are ALARP.

In determining whether the risks are ALARP, the regulator will assess whether applicants⁵ have made a compelling argument (supported with evidence) to show they have taken (or will take) all reasonable measures including:

- compliance with the Space Industry Regulations and other relevant health and safety legislation as far as it is within the scope of the licensed activities;
- implementing appropriate standards where they exist and recognised good practice;
- consideration of further risk reduction measures.

Risks in the tolerable region (figure 2) can only be considered acceptable where it is clearly demonstrated that it is not reasonably practicable to do more to reduce the risk.

⁵ The term 'applicants' is used throughout this document to refer either to licence applicants or to existing licensees who wish to make a variation to their safety case

Principle 2 - The regulator will consider both individual and societal risk.

The regulator will compare the applicant's numerical estimates of risk with the framework in figure 2 (see section 1.2 for further information).

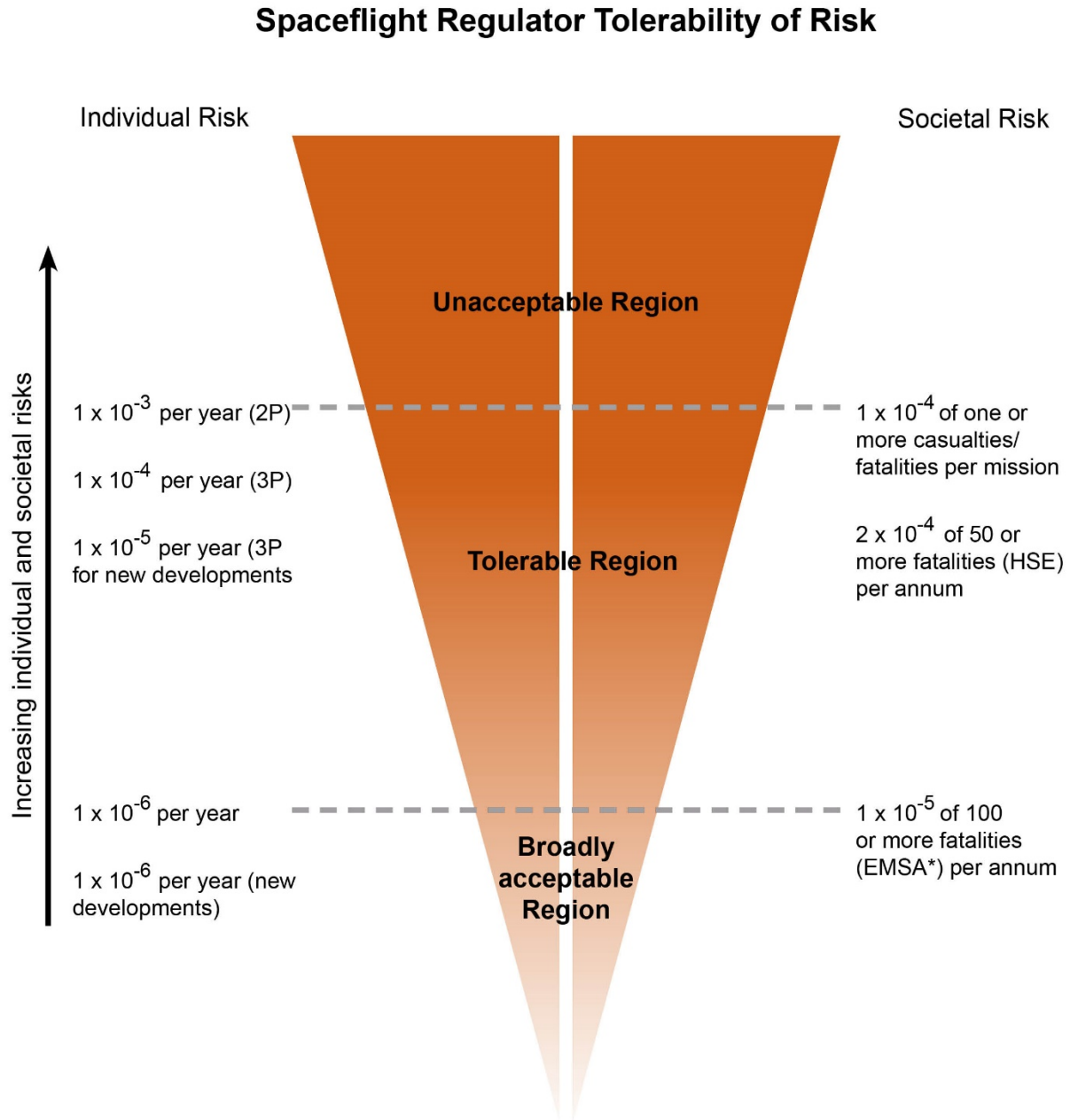


Figure 2 - Indicative tolerability of risk⁶

⁶ 2P and 3P refer to second and third parties respectively, i.e. people directly involved with the activity (excluding spaceflight participants) compared with people who are not involved; EMSA is the European Maritime Safety Agency