To handle stricter safety regulations combined with increasing complexity and shorter development cycles, it is necessary to consider safety aspects starting from the early phases of design. This paper presents an approach to link methods of safety analysis and modeling (SysML). Even though SysML and MBSE are common in the early stages of system design, there is a lack of methods integrating model-based design activities and safety analyses. Existing approaches either focus on particular tasks or build models after conducting separate safety analyses. Our presented approach, tailored to early stages of system design, introduces a “Hazard Analysis” SysML profile accompanied by a procedure for its application within a model-based safety analysis. It provides a preliminary hazard analysis and facilitates the systematic identification of safety-critical functions and components.