Table 10.1 Evolution of a Product Stability Performance Profile

Study stage	Timing
Preformulation	Pre-IND
Formulation development	Phase I-II
Proposed product	Phase III
New product	Scaleup and approval
Established product	Postapproval
Revised product	

The design of each study must begin with a clear objective. With the objective in mind, the attributes to be measured are defined, and appropriate test methods are defined or developed; the storage conditions, assay schedules, and types of samples are selected; and the timing and method for data evaluation are determined.

The importance of a clearly stated objective cannot be overemphasized. For example, a study to determine the effects of metal ions on the stability of a new active ingredient in aqueous formulations will be quite different from a study on an established product to confirm its stability performance profile.

II. PREFORMULATION STAGE

The first assessment of the stability of a potential new product begins in the preformulation stage. During this phase the first requirement is the development of analytical methods that are specific for the drug substance in the presence of process impurities and degradation products. Two types of stability studies are conducted during this stage.

A. Profile Studies

The first type is to determine the profile of physical and chemical properties of the new drug substance. To identify probable routes of degradation, the active ingredient should be subjected to short-term accelerated studies to produce obvious changes (Table 2). The storage conditions should be geared to possible degradative conditions, such as heat, light, moisture, and oxidants. Testing schedules are chosen to allow estimates of stability parameters. The sam-