

Product Quality Best Practices	SUBJECT Product Quality Basics	LAST UPDATE July 2018
	APPLIES TO • Suppliers • Distributors	FOCUS ON Establish processes for managing product quality throughout an organization's supply chain.
	QUICK LINKS • PPAI Corporate Responsibility: www.ppai.org/corporate-responsibility/ • UL: http://services.ul.com/service/quality-inspection/ • Consumer Product Safety Commission: www.cpsc.gov	

Intended for beginner compliance programs

Italic grey text indicates a hyperlink listed in the Online Resources section of this document.

Background

Promotional professionals are accountable to their clients and consumers for the safety and quality of the products provided and the environment in which those products are manufactured. Every project should adhere to performance standards, responsible sourcing regulations, and protocols.

In general terms, quality refers to whether a product or service consistently meets or exceeds customer expectations and established requirements, specifications, and/or performance standards. Similar products may have different life cycle or performance expectations. In this best practice we will refer to quality as conformance to standards.

Quality Control vs. Quality Assurance

Quality control (QC) is product oriented whereas quality assurance (QA) is process oriented. Quality assurance reinforces that an organization is actually doing what it claims regarding quality. Quality control involves testing for performance, compliance, and other requirements.

Quality Management

Quality management (QM) ensures consistency across the organization's quality program by implementing and monitoring four quality components: quality planning, quality assurance, quality control, and quality improvement. Quality programs address a variety of points that define the acceptable level of quality that is to be expected by customers. The four components of a product quality provide the details and protocols that organizations use to establish and manage their quality processes.

Quality management goals are intended to proactively eliminate issues rather than deal with them after production. This process begins with internal reviews and assessments followed up by auditing processes and materials testing.

Quality management involves multiple approaches to examine and evaluate suppliers:

- Design with performance expectations in mind
- Partner with objective third-party testing organizations
- Audit through supply chain experts

- Work with trusted suppliers
- Personally visit factories for on-site review and observation
- Rely on client approved resources

A quality management program requires the development of policies and procedures that will guide and serve as a practical tool for the implementation of an organization's quality program from raw materials through delivery to the consumer.

Risk And Hazard Assessment

It is not enough to merely consider quality control and quality assurance. As a responsibility manufacturer, it is essential that you also consider risks associated with the use, and the misuse, of the product by conducting a thorough risk and hazard assessment. Some elements in this process include an age-grading determination—is this product intended for adults? How appealing is the product to children? Regardless of the audience, what are the risks associated with small parts and sharp edges? What, if anything, can you do during the design process to mitigate those risks?

Risk assessment can go far beyond the product. Many companies benefit from conducting an analysis of their own comfort level with risk and setting internal guidelines to ensure they do not cross those internal lines.

Supplier Selection

Once you have determined your expectations for quality and performed a risk and hazard assessment; you can begin looking for a production partner that is capable of meeting those expectations. It is important you identify the attributes of a qualified production partner. Consider asking:

- Does the factory perform quality and capacity audits? If so, how often? When was the last time an audit was conducted? What were the results?
- Is the factory ISO 9001? Are there certificates for review as evidence of good QC practices?
- Does the factory have good raw materials selection and inventory methods in place?

Product Inspection

Effective quality inspections allow for products to be reworked at the point of manufacturing, which in most cases has a lower cost than having to rework or repair once a customer takes possession of the product.

Inspection Benefits

- Reduction of non-compliant products reaching customers
- Preventing defective products from being shipped from the manufacturer
- Higher quality levels/higher customer satisfaction
- Reduction in product returns

According to *qualityinspection.org*, “Many studies across all industries have demonstrated that there is a cost and time ratio for development:production:delivery of 1:10:100. It means each error will cost 10 times more (in dollars and in time) to fix in production than it would to fix in development, and 100 times more if the error actually reaches the customer.”

Vendor scorecards can be used to measure supplier performance against requirements. This allows organizations to focus efforts on vendors that consistently do not meet requirements.

How To Inspect

Whether products are produced domestically or overseas, there are really only three options when inspecting products:

1. Do not inspect at all (not practical)
2. Inspect 100% of the products (too expensive)
3. Use a statistical sampling plan (proven alternative)

Inspecting nothing is not an option if the intent is to have an effective product quality program. Inspecting everything is simply not practical as it has been determined that inspecting all units all the time is not as effective as using a statistical sampling plan.

The most practical and most common inspection option available is a strategically targeted sampling plan. Strategic sampling takes into consideration a variety of criteria when deciding what and when to inspect such as:

- Comfort with the manufacturer’s ability to control quality throughout the manufacturing process.
- Knowledge of whether or not the factory has an adequate quality control system in place.
- Whether or not a product is existing, new or a new release.
- Difficulty in producing the product.
- Customer expectations
- How critical the program or new product launch is to the organization’s reputation.
- Subjectivity to chargebacks and/or return authorizations.

The Process

1. At the onset of each product being considered for production determine the type of testing that must occur.
 - a. Conduct a risk and hazard assessment of the product to determine the audience, potential risks associated with

the use and misuse of the product and identify steps to take during the design process to mitigate those risks.

- b. Review and discuss projects, product categories, materials, and other criteria to determine the types of mandatory testing and labeling requirements.
 - c. Determine mechanical and performance requirements and the type of testing needed.
 - d. Do the materials contain lead, cadmium, PVC? Is the material flame resistant? Will the material shrink, fade, tear? Could some parts be dangerous? Is it a child’s product (involving further stringent testing protocol)?
2. Determine whether testing and inspection will be internal, external, or a combination of both.
 - a. Contact independent inspection agencies where applicable.
 - b. Reviews and discuss projects, product categories, materials, and other criteria to determine the types of mandatory testing and labeling requirements.
 3. Provide the factory with the testing protocols prior to beginning production.
 - a. Performance requirements.
 - b. Physical specifications.
 - c. Compliance regulations.
 4. Test the sample product against the examination protocol established at the onset of the pre-production stage and again at the end of the production for quality and performance.
 - a. Ensure the product matches specifications and that colors and/or imprint are correct and accurate.

Development Stage

Assess potential hazard in the design stage which thus reduces or eliminates issues or potential for failure. Hazards to consider include:

- Mechanical
- Chemical
- Toxicological
- Microbial
- Electrical
- Flammable

Testing Protocols

- Pre-production to verify compliance and to identify any issues with design, construction, or materials
- Production units from the production line to verify quality of materials and workmanship
- Batch testing for reorders to ensure that particular production run is compliant
- Component declaration forms are used to ensure all components and process of manufacturing have not changed at the factory level.
- Prop 65 compliance is attested by suppliers based on products shipped to the state of California.
- Youth product compliance is determined according to federal regulations based on audience, distribution method, manufacturer intent, age grading, and how the product is commonly recognized. The individual state in which the product will be distributed may also affect compliance.

Product Life Cycle

Bringing a product to market can be challenging and complex. The normal life cycle of a consumer product is depicted in figure 1. A large number of quality-related activities correspond to the product life cycle starting from product development through design, manufacturing, transportation and delivery to end users. While it may be cost prohibitive to conduct quality checks at each stage, knowing how and when to apply quality checks will keep production on schedule and control the overall quality of the products being produced.

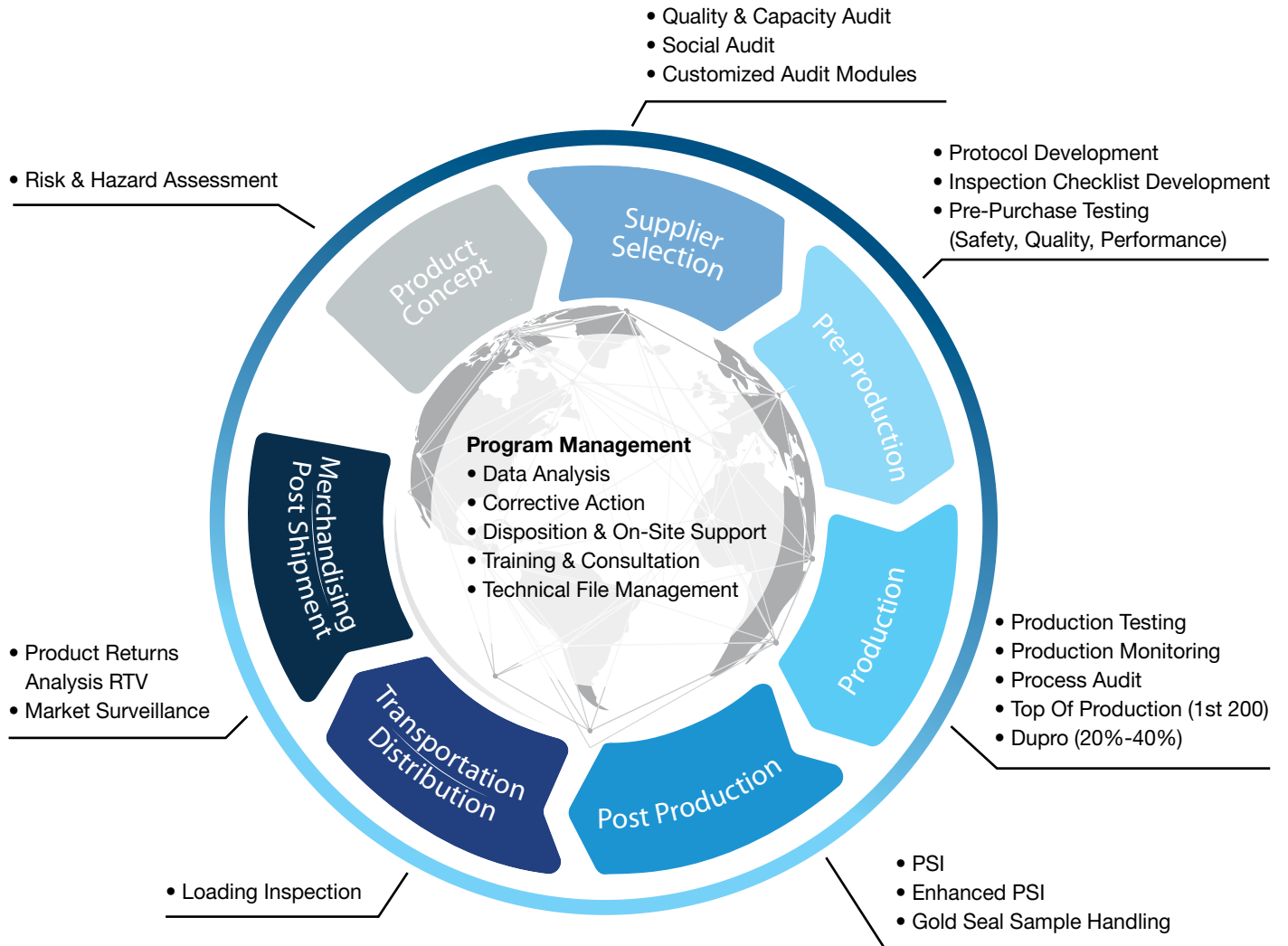


Figure 1 - Source: UL - End-to-End Supply Chain Product Lifecycle Inspection

Online Resources:

International Organization of Standards (ISO): http://www.iso.org/iso/home/standards/management-standards/iso_9000.htm

Six Sigma: <https://www.isixsigma.com/new-to-six-sigma/getting-started/what-six-sigma/>

Lean Manufacturing: <http://www.lean.org/WhatsLean/>

