The design of a Quality Management System for pharmaceutical companies to optimize performance

Prof. Dr. Ingrid Müller
Albstadt-Sigmaringen University
mueller@hs-albsig.de
www.hs-albsig.de

Findings – 425 inspections
Medicinal products/Starting materials:

<table>
<thead>
<tr>
<th>Classification</th>
<th>Number (total 9465)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 - critical</td>
<td>193</td>
<td>2</td>
</tr>
<tr>
<td>Class 2 - major</td>
<td>989</td>
<td>10</td>
</tr>
<tr>
<td>Class 3 - others</td>
<td>8283</td>
<td>88</td>
</tr>
</tbody>
</table>

Member States of the EU and third countries

Source: EMEA 2007
## Quality deficiencies – EMEA: Ranking - Findings

| 1. Quality system and procedure (documentation) | 14,1 % (8,3 % = No. 4–Ranking of critical GMP deficiencies) |
| 2. Design and maintenance of premises | 6,7 % |
| 3. Design and maintenance of equipment | 6,2 % |
| 4. Documentation – manufacturing | 5,5 % |
| 5. Contamination, microbiological – potential for | 4,9 % |
| 6. Documentation – specification and testing | 4,5 % |

Source: EMEA 2007
<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Production</td>
<td>34 %</td>
</tr>
<tr>
<td>2. Quality Management</td>
<td>24 %</td>
</tr>
<tr>
<td>3. Premises and Equipment</td>
<td>17 %</td>
</tr>
<tr>
<td>4. Personnel</td>
<td>7 %</td>
</tr>
<tr>
<td>5. Quality Control</td>
<td>12 %</td>
</tr>
<tr>
<td>6. Documentation</td>
<td>5 %</td>
</tr>
</tbody>
</table>

Source: EU Regulatory Network, 13-14 November 2008
"Inadequate investigation of manufacturing and product nonconformances is the most pressing GMP concern on both sides of the Atlantic. Beyond just retraining, regulators are looking for a deeper understanding of the flaws in the quality system out of which operator errors stem.\textsc{, 2009}"

Regulations

• **International, e.g.:**
  – WHO technical reports, Guide to Good Manufacturing Practice
  
  *Quality assurance of pharmaceuticals: a compendium of guidelines and related materials [pdf 4.82Mb]*
  Volume 2, 2nd updated edition
  
  – PIC/S GMP Guide – Pharmaceutical Inspection Convention
  
  – ICH – International Conference on Harmonisation, Quality (Q) - topics

• **European, e.g.**
  – EU-GMP Guideline
Objective reliable quality has to be achieved.

Quality systems must be:
- Comprehensively designed
- Correctly implemented
- Fully documented
- Effectively monitored
Regulatory

- Norms, e.g.:
  - DIN EN ISO 9001:2008 - Quality management systems - Requirements
  - DIN EN ISO 9000:2005 - Definitions
1. Design a framework:
   A Quality Management System gives the framework to monitor and improve performance

2. Design the most important parts:
   Quality Manual
   Site Master File
   Document Management System
Quality Manual

- Development of a quality philosophy

- Description of the basic ideas of QMS: Ability to measure operational performance and product quality

- The QM describes the policies, processes and procedures of the QMS in compliance with the ISO 9001:2000
Quality Manual - Content

- Profile of the company
- Quality policy
- Terms and definitions
- Description of the QMS
- Responsibilities of management
- Management of resources
- Product realization
- Measurement, Analysis, Monitoring, Improvement
- Control of records
- References
Site Master File

- Contains specific GMP information about the production/control unit of pharmaceutical operations
- Is a useful base for inspections
- Should not be too lengthy (max. 25 pages - WHO)
– Information on the firm
– Personnel
– Premises and equipment
– Documentation
– Production
– Quality control
– Contract manufacture and analysis
– Distribution, complaints, product recall
– Self-inspection
Document Management System

• Compile Master-SOPs
  – e.g.: Identification numbers
  – General informations on all SOPs
  – Release

• Specify document type:
  – e.g.: production SOPs
  – Quality control SOPs
  – Equipment logbooks
Hierarchic principle of structuring:

- **Strategic level**: QM, SMS etc.
- **Operational level**: Flow-chart of manufacturing processes
- **Detail level**:
  - Manufacturing and quality control SOPs
  - Plans of hygiene monitoring
  - Instruction manual
Qualification/Validation Master Plan

Stability Management
• The majority of quality and regulatory activities are or should be “risk based”.
• Risk analysis should assess and characterize critical (GMP-, GLP-, GCP- etc.) parameters regarding equipment or processes.

Optimizing the quality
Reducing costs
Main Faults to avoid

- Should not overwhelm you
- Should be flexible for adaptation for your company (products, services, size)
- Everybody should be involved
„Quality is not an act, it is a habit“

„Totality of characteristics of an entity that bears on its ability to satisfy stated and implied needs“

Aristotle
Source: www.wikipedia.de
Thank you for your attention!