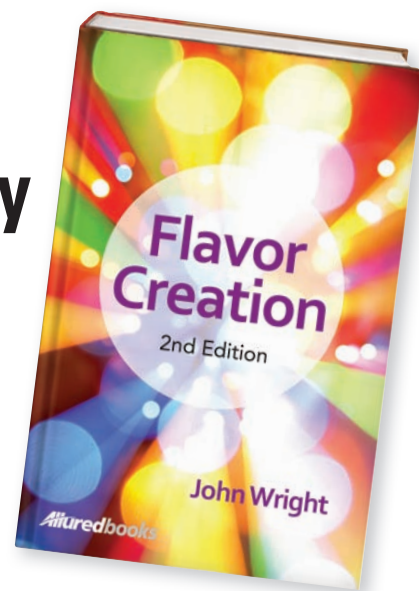




# Book Excerpt: Production-friendly Flavors

Tips on avoiding production delays  
and rejection by customer QA

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*The following is excerpted from the forthcoming fully revised text of John Wright's Flavor Creation, 2nd Edition. Learn more at [www.AlluredBooks.com](http://www.AlluredBooks.com).*

Imagine this scenario: an important new customer is targeted by sales. Every work function within the company is involved in putting together impressive capabilities presentations. Many months are spent building the relationship between the companies, the result of which is the vital trial brief being enthusiastically received; thus, superb teamwork and creativity ensure success.

So far so good, but that might not be the end of the story. Relieved commercial managers are encouraged to include the anticipated new wins in the following year's budgets, but what if the first trial order failed to arrive on time? What if it arrived on time but was rejected by the customer's quality assurance (QA) department? The whole edifice falls apart. Most in the flavor industry have experienced this disaster at least once and likely still bear the scars. How can this outcome be avoided?

In this sort of situation, the operations department inevitably finds itself the recipient of the lion's share of the blame, often with some justification. The department will probably try to shift responsibility elsewhere, frequently in the direction of the creative department, but that tactic is too predictable to carry much weight. Tempers may become frayed and

interdepartmental relations subtly deteriorate. New procedures are always put in place to ensure that "it can never happen again," but all too often the remedies only serve to make the underlying situation worse.

## Problems

An analysis of production problems that impact the customer, especially with respect to first orders, finds that they mostly fall into one of three categories.

1. One or more new raw materials were not in stock or did not arrive on time.
2. The new formulation contained errors in ingredients or processes and could not be compounded correctly as written.
3. The routine procedures in operations failed with respect to purchasing, compounding or shipping.

## Raw Materials

The number of raw materials used by operations is always a very contentious topic—the more materials in use, the more opportunities there are for quality issues. And so the addition of new raw materials is often treated as *the* main area of concern by operations, but the real problem usually lies in the overall numbers.

All good flavorists are enthusiastic to use novel ingredients, and that enthusiasm can, in the long term, easily lead to a raw material list that is far too long. A sensible maximum is around 5,000, allowing for differ-

ent versions of a significant number of the ingredients (e.g., natural and synthetic options for ethyl butyrate). Few companies that manufacture a full range of flavor types can honestly boast such a small list. Nevertheless, it is a great target to aim for because the advantages in terms of operating costs and service levels of a raw material list of 5,000 ingredients over a list of, say, 20,000 ingredients are tremendous.

Various well-intentioned options have been tried in different companies to limit and police the addition of new ingredients. Setting up complicated multidisciplinary committees to judge each ingredient application and running all new ingredients through sensory panels to compare them against existing ingredients are just two of the worst examples. Both ideas sound eminently sensible and have the added attraction of replacing creative intuition by "logical" decision-making. In reality, flavorists are best placed to judge the usefulness of raw materials because the effect of any single raw material in a flavor is highly complex and is not susceptible to simplistic rationalization. In any case, in many large companies the approval of a new raw material is already quite a challenge. The addition of these artificial barriers runs the risk of stopping completely an already arthritic process. Additionally, they separate the flavorist—who is trying to use the new ingredient—almost entirely from the process. That might seem to be a virtue, but all successful flavor

companies need a steady flow of new raw materials and all useful new raw materials need a champion.

There are several approaches that, in my experience, actually do work to facilitate the introduction of worthwhile new ingredients and simultaneously limit the more frivolous additions. Making R&D responsible for the production of initial medium scale batches of new raw materials generates a “win-win” situation. R&D is encouraged to use processes that scale up easily, and it has strong motivation to prioritize the best new chemicals for medium-scale production. This approach works well for internally developed raw materials and also facilitates later full-scale production, because scaled-up syntheses will have already been devised and proved. Unfortunately, this approach does not influence whatsoever new raw materials that are purchased from outside suppliers.

Making the creative function responsible for buying and holding sufficient stock to cover initial orders imposes a practical budgetary discipline to prioritize the best new raw materials and works equally well for R&D and externally purchased raw materials. It removes the temptation for operations to gamble against new raw materials and avoid holding stock. In many ways, it also ends up being win-win.

With the best will in the world even these two common sense disciplines will still generate a significant number of novel raw materials that do not take off. They need to be removed automatically, and a three-year limit on the listing of a raw material that has not been used in a selling formulation is hard to argue against.

In any case, limiting new additions to a raw material list is not the real problem. In far too many companies the main issue is multiple versions (for other than regulatory reasons) of the same raw material. In my opinion, the list of ingredients where this can be sensibly justified is very short. Rationalization of unnecessary ingredients can be done quite quickly and accurately. It does not necessarily have to be done by the creative function, but they are best equipped for the task and should be able to do

it confidently and quickly. No flavorist is going to welcome this kind of work but it can be spread evenly and soon becomes a minor weekly task. Over two or three years this will quickly trim down even the most ill-disciplined raw material list.

### Formulation Errors

The correct compounding order may be obvious to a flavorist, but it may not be appreciated in production. Compounding instructions

should be comprehensive and quite literally foolproof. Process details in particular should be carefully checked to ensure that the formulation can be scaled up without any change in flavor quality or physical characteristics.

Production problems are very common when scaling up process flavors, so much so that no sample should be sent to a customer unless it has been made on a production plant. Spray drying is also difficult to

duplicate on a small scale, and, once again, customer samples should be made on a small production drier.

Ensuring that operations run efficiently can easily make the difference between a profitable and unprofitable company. This challenge is often sidestepped by introducing a department that acts as an intermediary and modifies flavors for production. This solution can work, if it is staffed by creative staff and part of the creative function, but it is obviously much better (and safer) to train flavorists to make flavors with manufacturing in mind.

Individual flavorists should be responsible for their new flavors during the production of the initial trial batch. They should have a say in the acquisition sources of any new raw materials and, especially, they should have veto power in the QA process.

### Preventing Routine Operations Problems

The first two problem areas apply particularly to the initial production batch of a new flavor and are very difficult to avoid or solve without a close relationship between the creative function and operations. Flavorists can also help in a number of other, more routine areas.

If “too many raw materials in stock” is the favorite complaint from operations, the total number of formulations follows close behind. “Why (for example) do we need yet another raspberry flavor when we already have 23 in stock?” is a favorite refrain. This comment radically underestimates the complexity of most flavor categories and could only ever be made by a non-flavorist. Over the many years I have worked as a flavorist, I have never remotely approached the *déjà vu* situation of making the same flavor twice. If all customer submissions were made from a limited stock repertoire then virtually nothing would sell (as many large companies, who have attempted to set up Internet businesses selling to midsized customers from stock, have discovered, to their detriment).

In any case restricting the numbers of finished flavors only makes sense

if you need to hold stock of finished flavors, which is truly an approach from the last century. If stocks are kept of finished flavors (and, sadly, this is an inevitable consequence of a total lack of control of raw materials) then money is tied up in useless stock that can often end up written off. The answer is to control raw materials and compound everything to order. On the very rare occasion when this is not practical, it is better to hold a small key (comprising the bulk of minor ingredients) in stock. A few keys tie up little capital and can often be reworked if necessary.

The use of keys should be restricted to those few flavors that cannot be made quickly enough from basic raw materials. The individual flavorist’s shortcut-type of keys that can sometimes be used in the creative process have no place in production. Formulations should be “exploded” whenever possible.

This leads us to the third favorite complaint from the operations department: too many ingredients in a specific flavor. This complaint is often well founded. Most of the best-selling flavor formulations, irrespective of country or company of origin, contain fewer than 40 ingredients. Obviously all flavor types are not the same, and it may be sensible to use more ingredients in a coffee flavor than in a peach flavor. Despite that qualification, it is hard to see any logical reason why any flavor should contain more than 60 ingredients. It is simply not possible to justify the presence of 100, 200 or 300 ingredients in a flavor. Such flavors are usually the result of “mixology” or sloppy thinking during the creative process and will invariably benefit from the pruning down of the surplus ingredients.

Unlike the process of rationalizing the raw material list, the task of simplifying flavors is quite difficult and requires considerable experience to avoid errors. For this reason, it can only be carried out by the creative function. In reality a limited number of important flavors can be prioritized and “rationed out” sparingly to experienced flavorists.

In small flavor companies the relationship between the creative and operations functions is usually close.

They are probably located physically close together and identify themselves primarily with the company rather than their own department. Additionally, small companies, of necessity, expect staff to be involved in a wide range of disciplines.

In large companies, the reverse is often true, and it takes concerted positive action to ensure that every function does not retreat into a silo mentality. This explains why, despite superior systems and software, large flavor companies often fail to outperform their smaller competitors in any aspect of customer service.

Flavorist training is also a large part of the solution. Significant periods of time spent in operations and quality assurance will give trainees valuable insight into life outside the sometimes sheltered cloisters of the creative function. It is quite simple, for example, to filter out an insoluble residue in the laboratory. Practical experience of filtering 5 tonnes of cloudy flavor tends to encourage flavorists to take the simple step of always designing flavors that do not need filtering.

### General Issues

So far we have covered areas where flavorists can help, either directly or incidentally, to ensure that customers get exactly what they asked for, exactly when they wanted it. There are a few additional issues that fall entirely within the remit of operations, but they are so important that they merit inclusion in this chapter.

Of all structural mistakes in a company, none is more shortsighted and disastrous than control of QA by operations. The true motivation behind such a structure cannot be hidden. It is always horribly self-evident, both within the company and to customers. It discourages the open and free involvement of any other function in what is seen as a closed shop. Additionally, when problems occur, as they inevitably do, it is hard to demonstrate that any investigation is carried out in good faith.

Whether or not QA reports to operations, it is a department that can often be quite inwardly directed. Their biggest vulnerability in practice

is usually assuring the unadulterated status of purchased natural raw materials. QA departments generally develop highly ingenious and effective routine tests in this respect and catch the vast majority of potentially fraudulent materials. Unfortunately, catching the vast majority of potential frauds is not good enough. Sending random samples to R&D for analysis may be politically challenging and seem like overkill, but it will always catch even the most sophisticated and technically advanced villains.

Another common source of self-inflicted operational disasters is giving the purchasing function the freedom to change suppliers without the involvement of the regulatory and creative functions. Very few ingredients in a typical flavor contribute significantly to the raw material cost of the flavor, and it makes much more sense to concentrate on quality and ethical standards rather than trying to make insignificant cost savings. The

real costs of even one customer complaint will quickly dwarf any savings.

The last, and sadly almost universal, cause of operational problems is the byzantine network of systems that always evolve to run the various processes in operations. Every problem or challenge is answered by the addition of another elephantine layer of bureaucracy and generates a further whole generation of future problems.

One very telling test is to ask a manager in any operations department to provide a simple overview of all the key systems in operations. I have yet to find anybody who can, but they all seem comfortable working in an environment that they do not actually understand. To prove a point, I once worked out the distance walked (in this digital age) to simply fulfill one order; it was several miles, a virtual marathon!

Consultants make a fortune in this situation, and rightly so. The method

of separating processes that add value from the tangle of dross is not hard for an outsider but seemingly impossible for anybody conditioned by years of working within the system. Money paid to consultants in this case is usually money well spent.

Nevertheless, there is another unexpected, but much cheaper option. Applying for certification under ISO 9000, for example, would seem to run the risk of adding even more weight to an already creaking bureaucracy. In reality, it forces each area to examine every process in minute detail, actually understand and document the idiocies and discard everything that does not make sense. The volume of work involved is quite high, but I have never met anybody who feels, in retrospect, that it was not worthwhile.

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