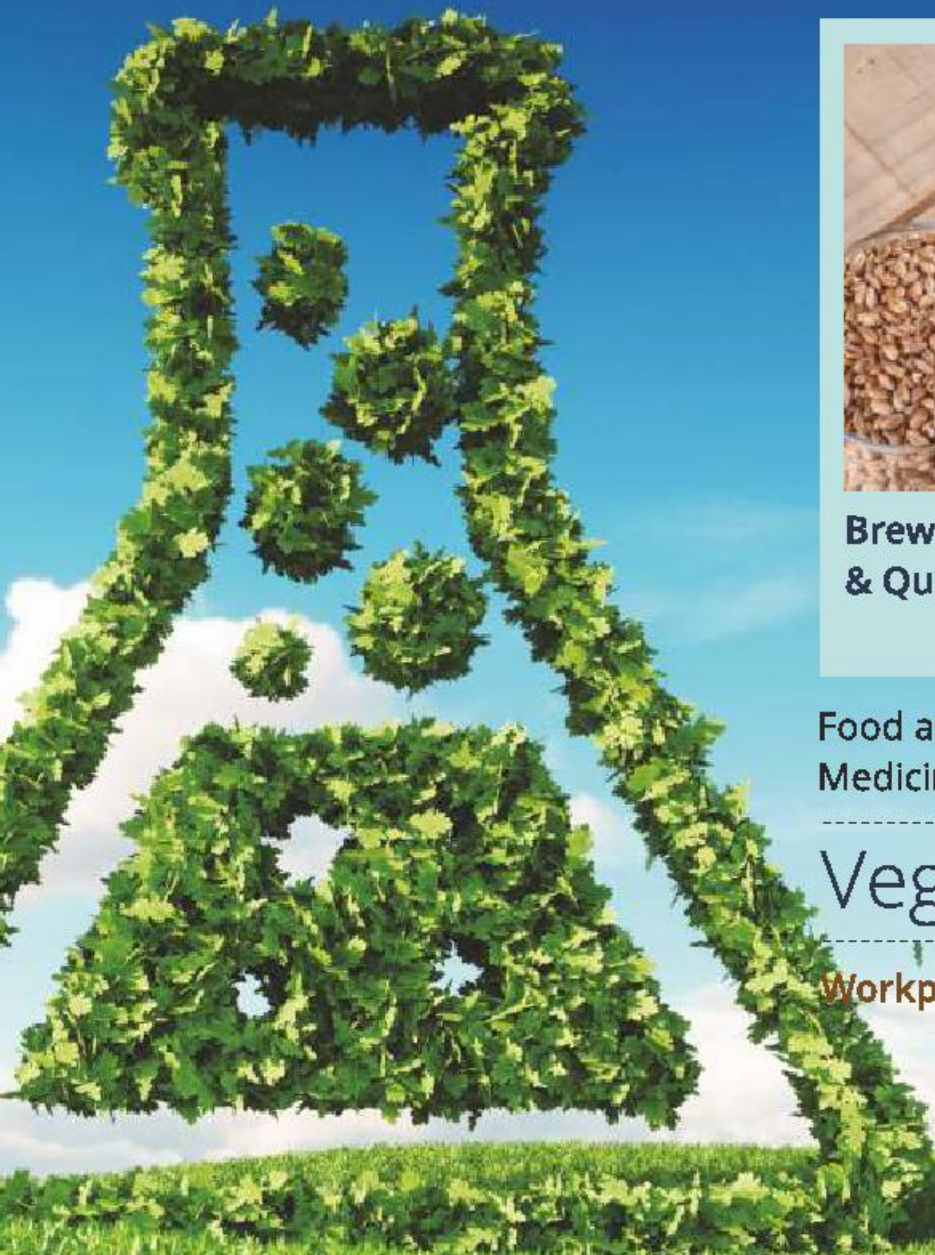


Catalysts

Sep-Oct-Nov-Dec' 2019

CONNECT

VOLUME 34



**Brewing Quality Control
& Quality Management**

Pg. **09**

**Food as Medicine or
Medicine as Food**

Pg. **16**

Veganism

Pg. **22**

Workplace Wellness

Pg. **27**





Catalysts
making things happen...

OUR VALUES

Customer Centric

Continuous Progression

Persistence & Hard Work

Integrity & Loyalty

Humility

Adaptability

Learning Attitude

CONTENTS

Message from the Managing Director	04
Message from the Director	05
Yeast Selection for Fermentation of Sugar, Grain and Fruit Wash	06
Brewing Quality Control & Quality Management	09
Food as Medicine or Medicine as Food	16
Biosecurity and Disinfection	18

Veganism	22
Processes, Stages and Benefits of Plastic Recycling	25
Workplace Wellness	27
Employees Zone	30
Events	33
Upcoming Programmes	34

Contributors



Joole Chauhan
Research & Development



Sh. Bijay Bahadur
Yuksom Breweries



Dr. KVT S Pavan Kumar
Research & Development



Nilesh Ladhha
Supply Chain



Satish Painuly
QA & QC



Namrata Tyagi
Research & Development



Message from the **Managing Director**



Dear Friends,

Wish you all a very Happy New Year 2020... It marks an end to the second decade of new millennium and a beginning of the new decade.

True to our value system Catalysts has continued the growth path in all aspects in the last decade. Somewhere at the start of this decade we visualized a dream of achieving 100 crore in annual revenue, which we accomplished in 2018 itself.

We also achieved many other milestones like establishing DSIR as well as NABL accredited R&D facility; creating state of art Corporate office cum warehousing facility in Delhi; Establishing two production facilities with all relevant certifications in Roorkee (Uttarakhand) to highlight a few.

We not only expanded our foot-print Pan India by establishing office cum warehouse facilities in Pune and Hyderabad, but also marketed our products in international markets of Asia, Africa and Latin Americas. We entered into various successful tie-ups and have continued to retain leadership position maintaining dominating market share in most of our target verticals.

At the beginning of this new decade it is time to have new dreams and set new goals. Now, with a solid foundation having been being laid, it is time to unleash our spirit of entrepreneurship and plan for exponential growth. It is time to target new verticals, explore new markets, make new tie-ups and venture into new businesses.

I am sure that with our well-defined value system and culture of Customer Centric Approach, Continuous Progression, Hard work, Persistence, Integrity, Ownership, Humility, Adaptability and Learning Attitude, we will accomplish all our dreams.

I once again wish all our customers, vendors, principals and colleagues a very successful, prosperous and exciting new decade.

Munish Madaan

“

Message from the **Director**

”

Dear Friends,

Wishing you & your loved ones a very happy new year !

2020 is not just another year but 2020 is a year when entire energies in this universe are also changing. For sure it would be good for some and not so good for few thus its our responsibility to do good deeds, be kind to all, be responsible towards our nature, people and the entire world. Having different perceptions is a sign of growth, not deterioration of a relationship.

Deterioration happens if we choose to reject this opportunity of growth through rejecting other's opinion, or them for their opinion. This year we have to open ourselves for accepting and considering others opinion which means we are open for growth.

At Catalysts too, this year we are committed to open ourselves more to encourage and welcome people with more ideas for higher growth. Fight more challenges at the market place. Excel with our new products & technologies in both existing and new verticals. Continue to practice fair and ethical means of business. Strive hard to give technical solutions to all our customer and industry needs. To grow and expand both internally and in the market. Increased engagement going forward with both clients as well as our teams for deeper and better understanding.

2020 is all about to align and balance our energies to have a smooth and productive year for all of us.

Wish you all a wonderful year ahead.

A handwritten signature in black ink, appearing to read 'Aditya Malhotra'.

Aditya Malhotra

Yeast Selection

for Fermentation of Sugar, Grain and Fruit Wash

By: Joole Chauhan,
Research & Development



Fermentation and Yeast – What's the Big Deal ?

Yeast are one of the most important components in your wash whether your making a Sugar Wash, Grain Wash or Fruit Wash. Remember Yeast are the one's converting sugar to alcohol in the fermentation process so without them there wouldn't be any Alcohol. Yeast also have a major impact on the flavor of your final spirit. The aroma and flavor from whiskey, rum, gin and moonshine arises during the fermentation process and thus choosing that proper yeast and keeping them happy during fermentation will leave you with an end product that tastes better than any store bought spirit ever could.

How Does Yeast Make Alcohol?

Yeast cells consume sugars found in corn, barley, sugar or fruit mash and produce carbon dioxide and alcohol as waste products. To relate, think about eating a hamburger and a glass of milk, 8 hours later what comes out is the equivalent to the carbon dioxide and alcohol the yeast extrude. When you drink that ice cold beer you're essentially drinking 3 – 5% yeast piss lol. Sorry I just couldn't resist. With Spirits it's more like 40 %



What basic conditions do yeast need to thrive?

- **Correct and Even Temperature** – The Correct Temperature will depend on the yeast strain that you are using for Fermentation. Check the back of the packaging for the correct Temperature and try to keep it within that range throughout the fermentation. It is important to maintain the correct fermentation temperature because if the yeast gets too hot they will become stressed; they will die if too cold and fermentation will stall.
 - **Proper pH** – The pH of the mash should be between 4.0 and 4.5 prior to fermentation. This will limit the growth of lactic acid microorganisms during fermentation. If you are fermenting with fruit which are naturally alkaline pH you must acidify prior to fermentation. You can adjust the pH using fresh lemon or lactic acid for acidifying the mash.
 - **Oxygen** – Oxygen is an important component for the Fermentation process that many people don't consider. Its presence is required at the beginning stages of the fermentation as Yeast needs oxygen to reproduce. When oxygen is absent the yeast will begin to produce alcohol and will cease to reproduce. You can aerate your wash by stringing it vigorously or giving the carboy a good shake before adding the yeast.
 - **Nutrients** – Yeast is a living organism and therefore needs nutrients to survive they can't simply survive on sugar alone. If you're doing a grain wash with malted barley, rye or wheat, geared to produce a wash alcohol of 5-10% there will be enough nutrients present to keep your wash healthy. However, if you're planning a sugar wash or a grain wash with an alcohol content higher than 10%, you should add fermentation nutrients to avoid any nasty smelling or tasting byproducts that unhealthy yeast will produce.
-

What problems can arise when yeast are stressed?

If you've created a terrible tasting rum, whiskey, vodka or moonshine in the past and can't figure out why it turned out so bad. The reason could be "Stressed yeast". When Yeast are stressed they produce excessive amounts of chemical compounds and flavors that don't taste very good. These include:

- **Sulfur** – Everyone knows that Sulfur gives a flavor of rotten eggs which nobody would like to sip on over ice. Sulfur naturally gets removed from your wash by CO₂. The more vigorous the fermentation, the less sulfur will be present at the end of the fermentation. You can achieve a healthy wash by creating a Yeast starter which will help the yeast to rapidly reproduce initially. Keep the temperature steady and make sure there are plenty of nutrients. Copper is also great at removing sulfur so if the plan is to distill your wash you won't need to worry about the sulfur.
- **Fusel Alcohols** – If you've had a wicked hangover after drinking a bottle of Moonshine, Fusel Alcohols are to blame. This group of chemical compounds have no distinctive aroma or taste, but will give you a killer hangover. Fusel alcohols can be removed during the distillation process by cutting the tails. To learn more about this process check out our Cutting tails procedure to keep the production of Fusel Alcohols to a minimum. You should ferment your mash as close as possible to the recommended temperature and keep it as steady as possible.
- **Overly Dry** – If there is a total lack of sweetness or taste in your wash, your yeast might have powered through the mash and eaten all of the good stuff themselves. Champagne yeast and distiller's yeasts have a tendency to do this.
- **Overly Sweet** – If fermentation stops and your wash is still very sweet you've probably ended up with a high concentration of non-fermentable sugars. This could be caused by incorrect temperatures when making your mash in the case of a grain wash. If you are using a sugar wash you've either got a stalled fermentation generally caused from low temperatures or your yeast have died off due to high temperatures or lack of nutrients. The end result is the same, a low alcohol yield.
- **Phenols** – Phenols produce a plastic / medicinal/Band-Aid taste to the wash. How can you stop the production of Phenols? Well start off by not using chlorinated water. You should also make sure all equipment used in the fermentation process is properly sterilized and an air lock is used during fermentation. Wild yeast contamination can contribute to the presence of phenolic compounds so a properly sterilized environment is key to reducing the production of Phenols.
- **Acetaldehyde** – Has the smell of green apples and can also cause bad hangovers. How can you eliminate the production of Acetaldehyde? Acetaldehyde exists in high concentrations when mash is not allowed to finish fermentation. So always allow it to finish up don't be in a rush. They can also be produced when wash is aerated in the late stages of fermentation or when it is allowed to sit for long periods of time after fermentation is finished. How can you remove Acetaldehyde from your Moonshine? Acetaldehyde has a very low boiling temperature so they will all be stripped out of the final product.

What Types Of Yeast Are Used To Ferment Moonshine Mash?



When you are selecting a yeast for your mash, there are several factors that are important to consider including: Final alcohol content expected in mash, ferment temperature and the product you are fermenting whether it be sugar, grain or fruit. By selecting the proper yeast you will ensure you get a complete fermentation and a great tasting final product.

- **Ale Yeast** – Danstar Nottingham ferments well between 57 F to 70 F. This strain is great when you are making wash at lower temperatures such as in your basement or in the winter time.
- **Wine Yeast** – Lavlin EC-1118 is available in most home brew shops and is typically used to ferment wines but works great for sugar shines with high starting ABV. It ferments well between 50 F and 86 F and has a high alcohol tolerance of 18%. EC – 1118 is also great to use when making a fruit wash.
- **Turbo Yeast** – I've used a number of different Turbo Yeast in the past and have had good results. The nice thing about Turbo Yeast is that it ferments faster than other strains and has a very high alcohol tolerance, generally between 20 -23%. I'd suggest only use half the nutrients included in the package. If you're making a whiskey or rum Turbo Yeast isn't the best choice. I'd only recommend using Turbo Yeast for vodka because during distillation you strip the entire flavor out of your product.
- **Generic Distillers Yeast** – Generic distiller's yeasts such as Super Start will give you good results and when you compare the cost it's a no brainer. You can buy this stuff by the pound at your local brew shop.
- **Bread Yeast** – If you're making a rum or corn whiskey mash recipe Bread yeast is one of the best yeast for the job. Not to mention it's easy to get your hands on. Just head down to your local grocery store to pick some up. Bread yeast will leave a great flavor in your final product.
- **Yeast Nutrients** – As mentioned earlier Nutrients give yeast the food to multiply and speed up fermentation they also keep the yeast healthy. Nutrients are often not required with grain and fruit recipes because there are already significant nutrients present in the Mash. They are generally required in high gravity sugar washes because of the lack of nutrients white sugar recipes. Keep in mind that too much nutrients may contribute to off flavors in your final product.

<https://learntomoonshine.com/yeast>

BREWING QUALITY CONTROL & QUALITY MANAGEMENT

By: Bijay Bahadur, Yuksom Breweries Limited

Introduction

With the presence of multinational breweries in India, the competition between Indian (local) and multinational breweries has become very intense. The issues related to production processes and beer storage and deals less with TQM issues are also being dealt through International technical cells or laboratories. Most successful breweries are those that manage to harmonize productivity with consistency of quality, while at the same time they have to maintain their market share by meeting the consumers' demands. Hence, quality in the brewery is a matter of concern that has to do with the entire supply chain and all the stakeholders involved from production to consumption. All the breweries focus on production as well as to ensure product quality consistently and reduce production costs through increased productivity.

Thus, the aim of this article is to describe the basic concepts of brewing quality control and quality management in the brewery, through the methods and tools of implementing quality control measures and quality management in the brewery and certain best practices of the breweries that abide by total quality management.

Variability in Quality Control Resources

There is a wide range of variability in the resources dedicated to quality control in the brewing process due to diverse aspects of a

- Size and age
- Degree of process complexity
- Degree of automation
- Types of beer produced
- Workforce size and level of competency and skill
- Availability of in-house technical resources
- Laboratory analyses
 - ▶ Chemical, physical, microbiological
 - ▶ Instrument calibration and maintenance

Quality Control Aspects in Malting and Beer Brewing Processes

Malting:

- Malting is a process of converting raw grain into malt.
- The malt is mainly used for brewing, but can also be used to make whiskey, malt vinegar or malt extract. Various grains are malted, the most common grains are barley, sorghum, wheat and rye

Malt:

Malt is germinated cereal grains that have been dried.

Brewing:

Brewing is the production of beer by steeping a starch source (commonly cereal grains, the most popular of which is barley) in water and fermenting the resulting sweet liquid (wort) with the yeast. It may be done in a brewery by a commercial brewer, or at home by a homebrewer, or by a variety of traditional methods.

The basic ingredients of beer are water and a fermentable starch source such as malted barley. Most beer is fermented with a brewer's yeast and flavoured with hops. Secondary sources (adjuncts), such as maize (corn), rice, or sugar, may also be used, sometimes to reduce cost, or to add a feature, such as adding wheat to aid in retaining the foamy head of the beer.

Steps in the brewing process include malting, milling, mashing, lautering, boiling, cooling, fermenting, conditioning, filtering and packaging.

Beer:

A generic name for alcoholic beverages (an alcoholic drink) produced from yeast-fermented malt flavoured with hops

The 3 Key Biochemical Processes

1. Malting

- Create enzymes at malt plant
- 3 Major steps involved
 - Steeping
 - Germination
 - Kilning/Roasting

2. Mashing

Convert starch from malt and adjunct to fermentable sugars during mashing in brewhouse (wort production)

3. Fermentation

Yeast ferments fermentable sugars to alcohol and CO₂ gas



Quality Control Aspects in Malting Process

Quality Control vs Quality Assurance

Quality Control is a process by which entities review the quality of all factors involved in production. ISO 9000 defines quality control as “a part of quality management focused on fulfilling quality requirements”.

This approach places an emphasis on 3 aspects:

- 1) Elements such as controls, job management, defined and well managed processes, performances and integrity criteria and identification of records.
- 2) Competence such as knowledge, skills, experience and qualifications.
- 3) Soft elements such as personnel, integrity, confidence, organizational culture, motivation, team spirit and quality relationship.

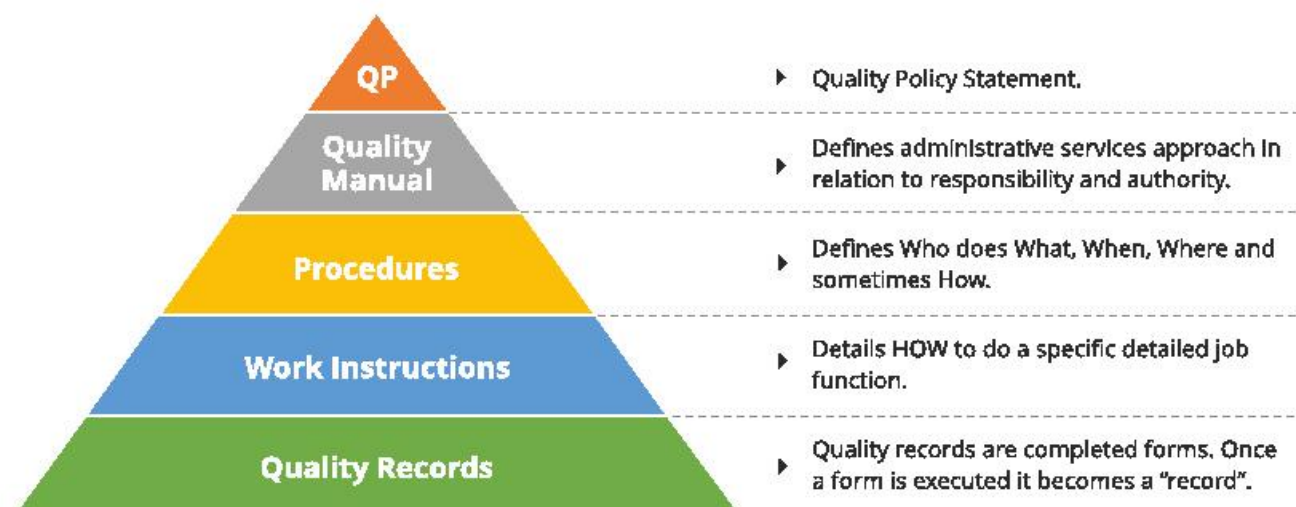
Controls includes product inspection where every product is examined in detail before the product is sold into the external market. The quality of the output is at risk if any of these aspects is deficient in any way.

Quality Control emphasizes testing of products to uncover defects and reporting to management who make the decision to allow or deny product release, whereas Quality Assurance attempts to improve and stabilize the production and associated processes to avoid or at least minimize, issues which led to the defects in the first place.

Quality as a discipline on the agenda for the breweries as the quality function:

- Requiring special staff
- Time consuming
- Costly

The Quality Hierarchy of Documentation



Quality Assurance assures the quality of the product (beer) by systematic monitoring of raw materials, in-process product and end product.

The Quality Priority Pyramid



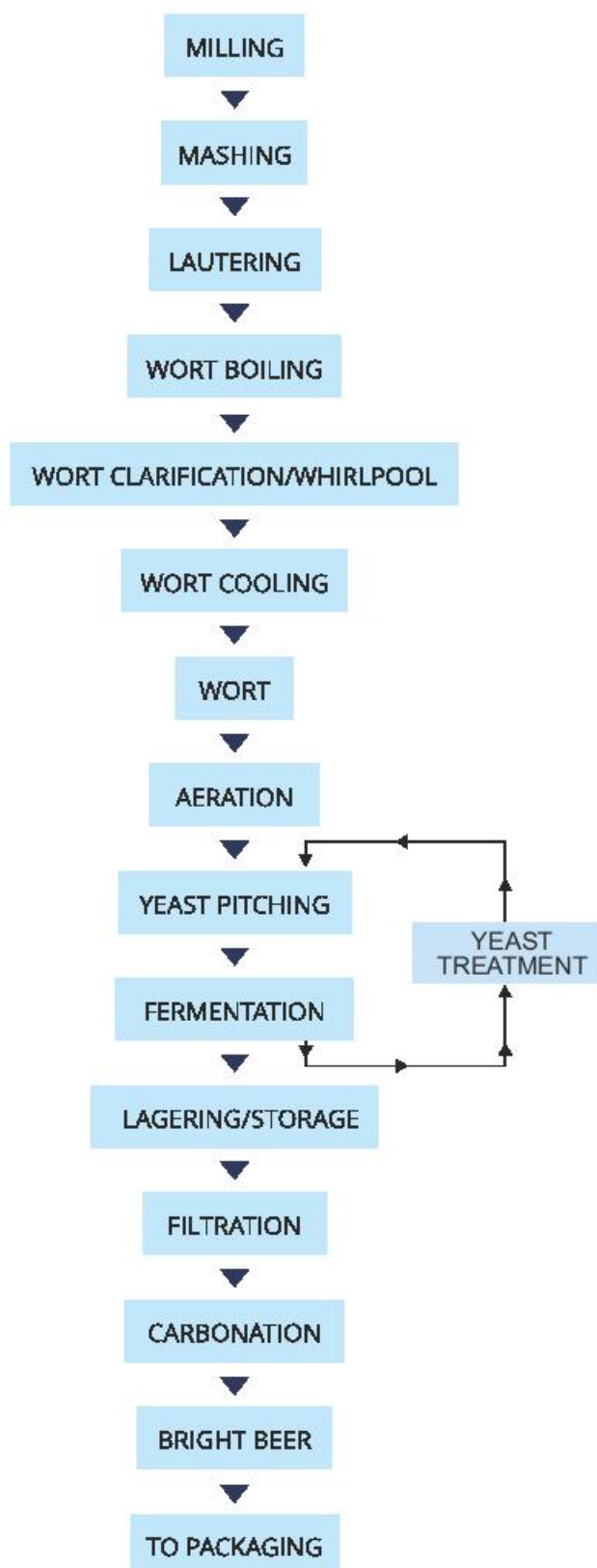
Simplified Malting Process

- Harvest
- Barley Intake
 - Receiving, inspecting and cleaning barley
 - Storing and handling barley and by-products
- Malting Wet Process (Malt House)
 - Steeping
 - Germination
 - Kilning/Roasting
- Malting Dry Process (Malt Elevator)
 - Cleaning, storing, blending and shipping malt
 - Storing and handling by-products

Malting Process Quality Control

- The barley is tested to check for suitability for malting and to prevent dead or unfit barley from entering the process. Some of the typical quality checks includes:
 - Colour and odour
 - % Moisture and water sensitivity
 - Nitrogen content (total nitrogen) and protein
 - % Foreign seeds and materials
 - Absence of damage and fungal growth
 - Germinative capacity and germination energy
- Barley type and variety
- Barley and malt kernel size
- Time
- % Kernel moisture
- Temperature and flowrate of water and air
- Colour of malt
- Protein, starch and enzymes levels
- Sensory evaluation

Simplified Brewing Process

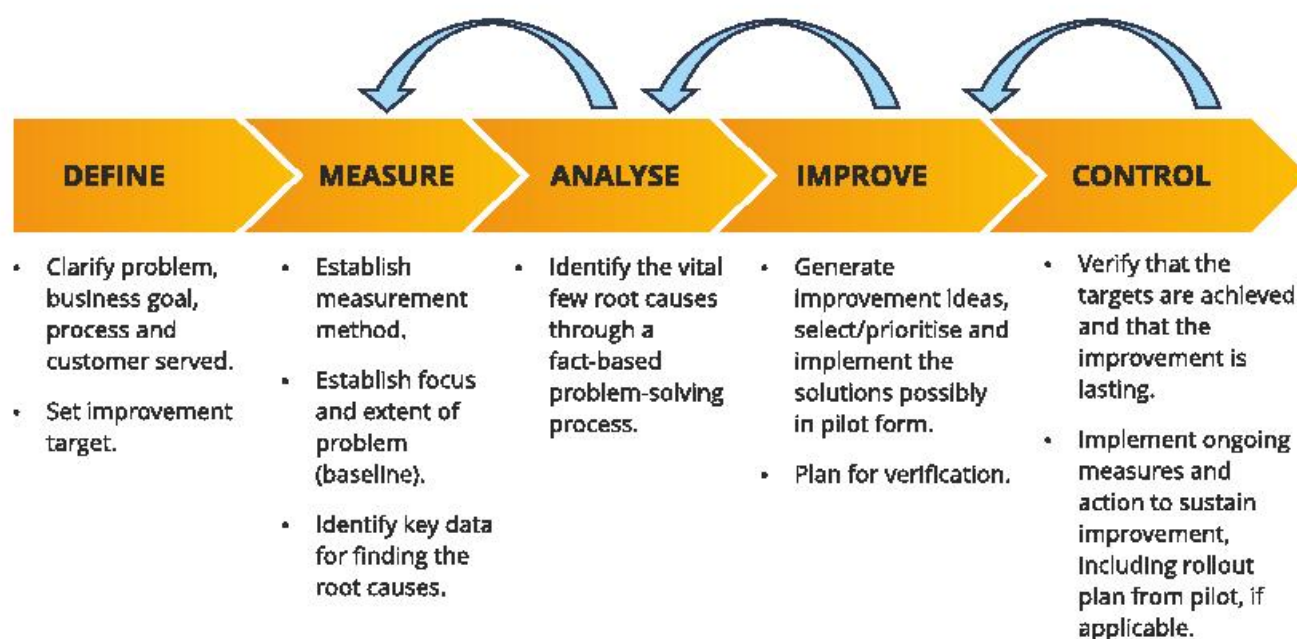


Brewing Process Quality Control

- Time (Manual vs automation)
- Temperature ((Thermometer vs resistance thermal detector)
- Pressure
- Gravity of wort and beer (hydrometer vs inline meter)
- pH
- Level (Sight glass vs level sensor)
- Air injection into wort
- Yeast Injection and pitching rates
- Yeast cell counts
- Yeast culture and propagation
- Yeast viability
- Dissolved oxygen, CO₂, SO₂
- Aerobic and anaerobic bacteria count
- Microbiological culturing media
- Turbidity
- Colour (Colour table vs spectrophotometer)
- IBU (Spectrophotometer)
- Alcohol (Alcohol by weight vs alcohol by volume)
- Foam collapse
- Standard Operating Procedures
- Sanitation
- Sensory evaluation
- Many more!

Quality Systems

At every brewery attempts to enhance quality management is a part of the effort to increase profits, improve the quality of both products and operations and prove environmental responsible behaviour.



A quality management program can be implemented in collaboration with other programs.
Some of these programs are:

Quality Management
System (QMS) ISO 9001/2

Environmental
Management System
(EMS) ISO 14001

Health and Safety
Management System
(HSMS) OHSAS 18001:2007

Food Safety
Management Systems
(FSMS) ISO 22000:2005

Hazard Analysis Critical
Control Points (HACCP).

Best Practices

Quality management in the brewing industry can be identified in every brewery. Quality department ensuring that quality requirements are reflected in the standards, specifications and procedures set by the Brewery. These requirements are set up to ensure that the brewery manufactures, delivers and sells safe, high quality products.

Brewery should focus on its quality policy, along with procedures for managing the quality of its brands and all specifications for raw materials, packaging materials and final products. Brewery should be certified in QMS (Quality Management System) and FSMS (Food Safety Management System), such as the ISO 9001 standard and the HACCP standard. QC laboratory must be validated for chemical, microbiological and tasting analysis. The evaluation of suppliers is supported by setting standards and procedures for auditing, as well as training auditors to carry out these roles.

Brewer must set and monitors quality measurements that are close to the customer and consumer, like the consistency and freshness of the product in the marketplace. The brewery also takes under serious consideration the customers' and consumers' opinion by taking all the necessary feedback, including complaints. Immediate action is taken about all kinds of complaints. Furthermore, brewery should try to achieve customer-relevant targets right at the first time. Finally, brewery should not only rely on its own resources, but it seeks advice from external experts on food safety and quality issues.

Conclusions

Quality management in the brewing industry is improving the various operations performed within and outside the brewery. In order to find the right tool that could cover most of the areas in a brewery; it is most appropriate to conduct technical audit at regular interval for the assessment of a brewery. The audit report must categorize operations in order to identify existing problems, which could be eliminated. Operations strategy is the basic factor that will provide the basic conditions for improvement in a brewery. Therefore, the report should be used to determine the brewery's profile and to identify areas for improvement so as capabilities and strategy can be aligned.

Breweries with multiple operations and the continuous batch production is done in production lines. This means that the concepts of lean production and lean six sigma can find direct application in their operations. Lean manufacturing improves the execution time of a process, while 6 Sigma is a tool that brings the process under statistical control with tremendous accuracy in the percentage of defective products. The combination of these two concepts aims at reducing costs and complexity of a process, thus it is a very powerful quality tool. Last but not least, QMS are necessary for the implementation of quality in every brewery.



Food as medicine or Medicine as food?

(In continuation from volume 33)

Dr. KVTS Pavan Kumar,
Research & Development

Air pollution is the present-day challenge and has become a global problem. As per WHO (World Health Organization) statistics, air pollution claims seven million lives annually across the globe and in India it is the fifth leading cause of deaths. The industries and vehicles are one of the reasons for the air pollution, but the chemicals used in day to day life such as air fresheners, off-gassing from plastics etc. adds up to the toxic load on our lungs. The strategies adopted by us to avoid health impacts like wearing masks and installing air purifiers will only limit our exposure to pollutants but cannot completely protect us. The exposure to

these pollutants generates a lot of free radicals (highly reactive molecule) in our body which causes various complications like heart disease, Cancer, breath discomfort and even early ageing.

Diet is a simple and safe method to help our body to fight against the free radicals. Healthy eating helps our body to recover fast and boost "Detox Enzymes" that works as our first line of defence mechanism to counteract free radicals. The Important elements that activates detox enzymes are present in fresh fruits and vegetables those are rich in antioxidants, omega 3 fatty acids, vitamins such as vitamin C & E.

Antioxidants are well known protecting agents against free radicals. Vitamin C is most powerful antioxidant that is abundantly present in citrus fruits such as amla, guava etc. and available in vegetables like chaulai ka saag, coriander leaves, drumsticks, cabbage. Turmeric is an age-old known antibiotic and antioxidant. The combination of turmeric and ghee (desi ghee) can relieve cough and aid during asthma symptoms raised due to air pollution.

Beta Carotene is another antioxidant that helps in controlling inflammation and is required in the body for producing vitamin A. Leafy vegetables such as methi (fenugreek), spinach, radish leaves, lettuce and carrot are the best source of beta carotene.

Vitamin E supports human body during injury and plant-based cooking oils like sunflower, safflower and rice bran oil are rich sources of vitamin E. The almonds, sunflower seeds, and nuts are great vegetarian source for vitamin E while salmon, roe and eel are non-vegetarian source.

The detrimental effects of air pollution are tolerated by our body with the help of Omega -3 Fatty acids. They are essential for brain and heart health by reducing oxidative stress. Having these in our food helps the body to recover fast and the rich sources of these are fishes. Though there is no equivalent vegetarian source available, the vegans can depend on nuts, walnuts, chia seeds, flax seeds, methi seeds, mustard seeds, kala Chana, bajra and rajma for the omega-3-fatty acids up to some extent.

In a nut shell eating lot of seasonal fruits along with leafy vegetables such as salads of avocado, broccoli, tomatoes, carrot, radish, flaxseed with olive oil etc will not only serve as a great food that also keep us strong to fight against the life threatening air pollution.



Anti-pollution Smoothie

(Source: standard.co.uk)

Recipe: Take one handful of mixed berries, one tablespoon flaxseed, half piece avocado, one scoop vegan berry protein powder and blend with almond or coconut milk in a smoothie maker. (Drink immediately after making)





Biosecurity and Disinfection

- Technical Team : Animal Nutrition

What is Biosecurity?

Biosecurity is a procedure to prevent the introduction and spread of disease-causing organisms in poultry flocks. Protecting poultry flocks from microorganism contamination is essential for profitable commercial poultry production. The introduction of any highly pathogenic, contagious disease organism into poultry flocks could result in serious economic consequences for producers. Daily biosecurity measures need to be practiced to minimize inherent disease risk associated with present day commercial poultry production. Following daily biosecurity procedures and upgrading them is more economical to prevent occurrence of infectious diseases, rather than spending heavily on the treating them and losing birds to mortality. This is of greater value in the current system of contract farming and integration practices.

How Microorganisms Spread?

Humans and animals are important carriers for transporting disease causing organisms. The primary method of spreading disease causing microorganisms in poultry flocks is the use of contaminated equipment or exposure to contaminated clothing and footwear of humans. Infected animals, such as wild birds and rodents, can also be a carrier of disease in poultry flocks. Disease causing viruses and bacteria can be transported from one flock to another through bird transportation equipment, trucks, tractors and other farm equipment including egg trays.



How to Identify Onset of Disease?

It is important to be aware of the initial signs of disease in flocks. Early detection of contagious diseases can greatly reduce the impact and spread of that disease to other flocks. Clinical signs associated with the possibility of a disease in a poultry flock are:

- Lack of energy and appetite
- Decreased egg production
- Soft-shelled eggs or misshapen eggs
- Swelling of the head, eyes, comb, wattles and hocks
- Purple discoloration of the wattles, combs and legs
- Nasal discharge
- Coughing, wheezing and sneezing
- Lack of coordination in mobility
- Diarrhoea
- Sudden or excessive mortality without clinical signs

Biosecurity covers everything from managing equipment, feed, any animals that might come into contact with the birds and people coming onto farm (both visitors and staff), as well as the location chosen for the farm.

One should work very closely for tailor-made biosecurity plan for the farm. Vaccination programmes should also ideally be compiled according to farm's specific requirements.

Components of a biosecurity programme include

- Physical security
- Personnel security
- Material control & accountability
- Transport security
- Information security
- Program management
- Hygiene management

How to Reduce Risk of Infectious Diseases?

Prevention is always better than cure. A complete disease prevention programme includes good biosecurity, good management and a well-designed vaccination programme.

It is more important to analyse loop holes in the bio-security programme on a farm, rather than diagnosing the disease agent involved in the problem. With good attention to biosecurity, one can reduce dependency on extensive testing and medication.

The two important objectives of an effective biosecurity program are

1. To prevent the disease from coming onto the farm, and
2. To stop the disease from leaving the farm.

Among all the above mentioned components, hygiene management is most important for preventing or controlling microorganism entering and leaving the production site. Three terms are commonly used to describe microbial control:

- Sterilization – Destroying all infective and reproductive forms of microorganisms (bacteria, fungi, virus and the like).
- Disinfection – Destroying all vegetative forms of microorganisms. Spores are not destroyed.
- Sanitation – Pathogenic organisms are present but are not a threat to the birds' health.

There is a general impression that “sterile” environment can be created by use of disinfectants, in fact only a sanitized condition is achieved with application of a disinfectant and there always remains threat for recontamination through different means as mentioned earlier. The most important thing to remember while disinfecting an environment is that cleanliness is the essential criterion. Proper cleaning removes most germs and is always done before using disinfectants. This applies to all areas, including floors, walls, equipment and personnel. Disinfection is a crucial step which might normally be overlooked. Disinfectants should be applied only after the building and equipment have been thoroughly cleaned, ideally immediately after rinsing. Disinfectants can be applied by sprays, aerosols or fumigation.

Steps for cleaning before disinfection

- Remove as much organic matter as possible from surfaces being disinfected
- Remove dust, chick down, droppings, tissue residues and such, thoroughly clean surfaces, using warm water and appropriate cleaning aids
- Select appropriate detergent to produce the cleanest environment possible taking into consideration variations in water hardness, salinity and pH
- Thoroughly rinsing with enough clean, sanitized water to complete the cleaning process
- Remove most lingering residues of detergents, organic matter or microbial germs

Types of Disinfectants

The types of disinfectants generally used are:

- Phenolic compounds
 - Iodine or iodophors
 - Chlorine compounds
 - Quaternary ammonium compounds
 - Oxidizing compounds
- Not all disinfectants are suited for every situation. When selecting the disinfectant, carefully consider these:*
- Type of surface being treated
 - Cleanliness of the surface
 - Type of organisms being treated
 - Durability of the equipment/surface material
 - Time limitations on treatment duration
 - Residual activity requirements

Why Virus Zero?

Virus Zero provides chlorine dioxide a powerful yet safer disinfectant widely used in controlling most of the important diseases causing pathogens. Chlorine dioxide has gained popularity in the poultry farm sector as a water treatment solution due to a number of beneficial factors, such as:

- Chlorine dioxide is a proven fast and broad-spectrum disinfectant for animal drinking water systems
- Is effective over a wide pH range (4-10)
- Is less corrosive than simple chlorine chemicals
- Effective at low dosing rates
- A powerful & potent oxidiser in water
- Highly effective at removing biofilm in water distribution lines
- No formation of chlorinating by-products (Tri-Halo-Methanes)

How to Use Virus Zero?

- Dilute with clean water 120L + VIRUS ZERO Litre
- Spray Diluted 1L to about 5000 in the house of chicken twice a day, after 30 minutes of feeding
- Please adjust dilution up to 300 PPM (20 litres of water + 1 litre) depending on
 - Concentration of ammonia gas
 - Amount of sunshine
 - Height of the building
 - Growth of the chicken
 - Wind intensity
- It is advisable to spray in the form of fine mist spray to avoid wetting of birds
- There is no harm in touching the chicken directly
- One additional application is recommended during the epidemic period

Benefits of Virus Zero

- Reduces mortality due to infectious conditions
- Improves Immune & Body Booster
- Improves Body Weight Gain
- Improves performance in layers and breeders
- Reduces treatment cost





Veganism

By Nilesch Laddha
Supply Chain

Vegans argue that animal farming is not only cruel but also bad for the environment. World Vegan Day, on 1 November, puts the focus on the vegan way of life.

'All life deserves respect, dignity and compassion. All life.' – Anthony Douglas Williams

What is veganism and what do vegans do



Vegans try to live, as much as possible, in a way that avoids exploiting and being cruel to animals. This means following a plant-based diet. Vegans do not eat animals or animal-based products like meat, fish, seafood, eggs, honey and dairy products such as cheese. For many vegans, living a committed vegan lifestyle means not wearing clothes made from animal skins and avoiding any products which have been tested on animals.

How are vegans different from vegetarians?

Vegetarians don't eat meat or fish but they can eat eggs, honey and dairy products, but vegans don't eat any animal-based food products. Vegans argue that suffering is caused in the production of these foods, for example they say that, on some dairy farms, male calves are killed because they are too expensive to keep, and on some farms, cows are killed when they get older and produce less milk. Similarly, on some egg farms, male chicks are killed because they do not produce eggs. As for honey, vegans say that bees make honey for bees, not for humans, and that bees' health can suffer when humans take the honey from them. Vegans believe that the products they use and consume should be free from not just cruelty but any exploitation of animals.

When did veganism start?

The Vegan Society was founded in 1944, but there is evidence of people deciding not to consume animal products over 2,000 years ago. The sixth-century BC Greek mathematician and philosopher Pythagoras was in favor of kindness to all species, and his diet could be described as vegetarian. There was a tradition of vegetarianism in the Indus Valley, Babylonian and ancient Egyptian civilizations even earlier. The Vegan Society points out that in 1806, the famous romantic poet Percy Bysshe Shelley was one of the first people to publicly object to eating eggs and dairy products on moral grounds.

Why do many people decide to become vegan?

For many people, the main reason for going vegan is probably that they believe that animals and all other sentient beings should have the right to life and freedom. However, there are other reasons. Vegans argue that the production of meat and other animal products is very bad for the environment. They point out that a huge quantity of water is needed to grow grain to feed animals in the meat industry. The enormous amount of grain which the meat industry needs often leads to forests being cut down and habitats being lost. In contrast, much lower quantities of grain and water are needed to sustain a vegan diet. In addition, many vegans say that all the nutrients our bodies need are contained in a carefully planned vegan diet and that this type of diet also help prevent some diseases.

What is World Vegan Day?

On 1 November every year, vegans all over the world celebrate their way of life. There are workshops, exhibitions and public debates on World Vegan Day, and it is a wonderful opportunity for anybody thinking of becoming a vegan to learn more about the subject.

Sources:

- <https://www.vegansociety.com>
- <https://www.awarenessdays.com/awareness-days-calendar/world-vegan-day-2018>
- <https://www.azquotes.com/quote/1069748>

Preparation task

Match the definitions (a–h) with the vocabulary (1–8).

VOCABULARY	DEFINITION
1. A dairy product	a. a creature that can experience suffering
2. A calf	b. cereal that is grown and used as food
3. A chick	c. a meeting where people do an activity or talk about something
4. A sentient being	d. a product that contains milk
5. Grain	e. treating someone or something in an unfair way and gaining an advantage from it
6. Exploitation	f. an ingredient that helps you to grow, have energy and stay alive
7. A nutrient	g. a young bird which has just come out of the egg
8. A workshop	h. a young cow or bull

Match the definitions (a–h) with the vocabulary (1–8).

Task 1

Are the sentences true or false?

1. Vegans eat fish and seafood.	True	False
2. Vegans wear clothes made from the skin of an animal.	True	False
3. Vegans do not eat some things that vegetarians do.	True	False
4. More than 2,000 years ago, some people took a decision not to eat animals and animal products.	True	False
5. Many people become vegan because of a concern for the environment.	True	False
6. A variety of activities take place on World Vegan Day.	True	False

Task 2

Complete the sentences with the words in the box.

Avoids	Diet	Object
Opportunity	Quantity	Suffer

- Vegans try to live in a way that exploiting and being cruel to animals.
- Vegans say that bees' health can when humans take honey from them.
- Percy Bysshe Shelley was one of the first people to publicly to eating eggs and dairy products on moral grounds.
- A huge of water is needed to grow grain to feed animals in the meat industry.
- Many vegans say that all the nutrients our bodies need are contained in a carefully planned vegan
- World Vegan Day is a wonderful for anybody thinking of becoming a vegan to learn more about the subject.

Answers:

Task 1: 1. False 2. False 3. True 4. True 5. True 6. True

Task 2: 1. Avoids 2. Suffer 3. Object 4. Quantity 5. Diet 6. Opportunity



Processes, Stages and Benefits of Plastic Recycling

By: Satish Painuly : QC/ QA



A lot of us believe in recycling and practice it. Plastic recycling is imperative in making sure that natural resources are returned to nature to ensure their sustainability. Plastic was supposed to be the wonder product of the 20th century, but the toxic waste created by it is has been dangerous. Therefore, it has become imperative that we recycle all plastic waste.

What is Plastic Recycling?

Plastic recycling is the process of recovering different types of plastic material in order to reprocess them into varied other products, unlike their original form. An item made out of plastic is recycled into a different product, which usually cannot be recycled again.

Stages in Plastic Recycling

Before any plastic waste is recycled, it needs to go through five different stages so that it can be further used for making various types of products.

- **Sorting:** It is necessary that every plastic item is separated according to its make and type so that it can be processed accordingly in the shredding machine.
- **Washing:** Once the sorting has been done, the plastic waste needs to be washed properly to remove impurities such as labels and adhesives. This enhances the quality of the finished product.
- **Shredding:** After washing, the plastic waste is loaded into different conveyer belts that run the waste through the different shredders. These shredders tear up the plastic into small pellets, preparing them for recycling into other products.
- **Identification and Classification of Plastic:** After shredding, a proper testing of the plastic pellets is conducted in order to ascertain their quality and class.
- **Extruding:** This involves melting the shredded plastic so that it can be extruded into pellets, which are then used for making different types of plastic products.

Benefits of Plastic Recycling

After knowing the processes and stages of plastic recycling, it is also important to know its various benefits. A few of them are:

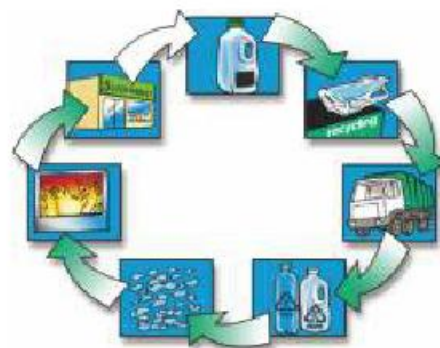
- **There's A Ton of Plastic:** One of the biggest reasons for recycling plastic is its huge quantity. It has been observed that 90% of the waste accumulated by the municipal corporation is a plastic waste. Apart from this, plastic is used for manufacturing various types of goods and items that are being used on a daily basis. This will not only help increase the production of plastic but will also take care of the environment.
- **Conservation of Energy and Natural Resources:** The recycling of plastic helps save a lot of energy and natural resources as these are the main ingredients required for making virgin plastic.

Plastic recycling not only promotes proper utilization of plastic waste but also helps conserve the environment, making it cleaner and greener.

Processes of Plastic Recycling

Among the many processes of recycling plastic waste, the following two are the most popular in the industry.

- **Heat Compression:** This type of plastic recycling is gaining special demand in the United States, Australia, and Japan because of its ability to recycle all types of plastic at once. It takes unsorted and cleaned plastic waste and mixes it in huge tumblers that churn the entire mixture. The major advantage of this process is that it does not require matching forms of plastic to be recycled together.
- **Monomer:** Through the elaborate and accurate monomer recycling process, major challenges of plastic recycling can be overcome. This process actually reverses the polymerization reaction in order to recycle the same type of condensed polymer. This process not only purifies but also cleans the plastic waste to create a new polymer.



Saving petroleum, water, and other natural resources help conserve the balance in nature.

- **Clears Landfill Space:** Plastic waste is accumulated on land that should be used for other purposes. The only way this plastic waste can be removed from these areas is by recycling it. Also, various experiments have proven that when another waste material is thrown on the same ground as plastic waste, it decomposes faster and emits hazardous toxic fumes after a certain period. These fumes are extremely harmful to the surrounding area as they can cause different types of lung and skin diseases.

Source:- Different sources

WORKPLACE

WELLNESS

By: Namrata Tyagi
Research & Development

Workplace wellness is any workplace health promotion activity or organizational policy designed to support healthy behavior in the workplace and to improve health outcomes.

Wellness is an important facet of our everyday lives. Whether you are at work or at home, understanding how to take care of your body and what risks you are exposed to is an important step on the path to safety and health.



Air-quality indoors

Corporate employees spend 90 per cent of time indoors. This has a massive impact on their mental and physical health. To make the workplace healthier and more cheerful:

- Include balconies, open workspaces, operable windows and place plants wherever possible
- Ensure that the cleaning-staff use non-toxic, eco-friendly cleaning agents
- Regular maintenance of air-conditioning and humidifying systems. These
- Encourage employees to take an outdoor walk during lunch hours or break-times

Ergonomic Furniture

Musculoskeletal and orthopedic disorders account for 70 per cent of health issues at the workplace. The importance of switching to ergonomic furniture is extremely important.

- Ensure that computer/laptop tables and chairs are ergonomically adjusted – so that the screen is at eye-level and armrests are at the keyboard-level. Cushions should be used where necessary.
- “Active furniture” can be facilitated – stability balls, standing-desks, etc., can be arranged around the office for employees to use.

Mandate Movement

- Incorporate a short walk around the office once every hour. It gives your over-stressed eyes a break, releases muscles and boosts circulation. Take the stairs whenever possible. Perform 20 squats every time you visit the restroom. Think of creative ways to move.
- Stretch frequently
- Install play-booths such as table tennis or gym-spaces in the office. This can be a great stress-buster too.

Ambience

It is a well-known scientific fact that our environment can elevate or depress our mood and energy. Simple factors like color palettes have a significant impact on brain activity, mental and physical energy. For example:

- Colors like orange and red are proven to stimulate creativity, brain function, heart rate and blood pressure. These can be used on accent walls, paintings, cushions, etc., to add a pop of energy to the workplace. Pale blue is known to increase focus and productivity. Green spaces are refreshing, relaxing and enable calm, controlled work place.
- Designing the workplace to include a choice of spaces, each incorporating one of the above factors, can provide employees with a choice and a different setting for every type of work.
- Prevent overcrowding: Seating arrangements which jam people together can be suffocating and depressing.
- Deploy good lighting – neither blindingly bright nor too dim
- Maintain a comfortable air temperature
- Noise control is important. Harsh noises should be avoided. Light music can release dopamine and trigger good work.

Access to Nutritious Food

This is one of the single most life-changing necessities in a healthy workplace. Good nourishment can increase productivity by 20 per cent.

- Stock the pantry with fresh fruits, vegetable snacks such as cut carrots and celery in the fridge, green tea, a blender to allow juicing instead of choosing coffee, protein shakes or bars, etc.
- Run nutrition workshops to educate employees, and encourage healthy choices both in office and at home.
- Tie-up with external vendors who can supply employees with healthy lunches or food delivery options.



Structured Fitness Program

Fitness is the next big change you can gift employees with, for good health and wellness.

- Hire a fitness professional to visit your office and train those who can go for it
- Modulate an in-office gym, yoga studio or play-ground for sport activities
- Tie-up with studios or gyms to facilitate employee fitness outside office. Building community fitness plans, having online follow-ups, etc., can help.



Schedule Employee Check-Ups

Regular health screenings and follow-up consultations with medical professionals is extremely important. Whether the tests are conducted at office, or coupons are provided to employees for check-ups at their disposal, encouraging regular medical screenings and

awareness is key to cutting long-term medical expenses and losing employee productivity to health issues. This can fuel other workplace wellness programs and awaken employees up to looming health problems at the right time.

Stress-Management and Mental Health

Workplace wellness is incomplete without the mental health factor. Every person needs emotional support. With people spending a major portion of their time at office, mental well-being at work cannot be ignored.

- Provide access to counselors, online or offline
- Have weekly team discussions addressing work-stress and habits. Encourage sharing personal stories so colleagues truly get to understand and support each other. Turning co-workers into friends can make all the difference in work culture. Isolation causes depression, so make all-out efforts to create community-time.
- Encourage open one-to-one communication between colleagues, irrespective of hierarchy, to prevent work-related depression
- Arrange meditation classes, yoga sessions and other creative workshops such as art therapy to increase employee engagement
- Provide access to services such as childcare (on-site or off-site), life coaching, etc., to help employees structure their lives.
- Engage in charity projects as a community. Social work boosts happiness.

Create a better tomorrow for every individual and for the company as a whole, by prioritizing workplace wellness.

References:
www.entrepreneur.com
en.wikipedia.org

New Joinees



Sanjay Ghosh
Department:
Human Resource
DOJ: 02/09/2019



Ribhu Kumar Tiwari
Department:
Business Development
DOJ: 02/12/2019



Purva Sahay
Department:
Corporate Communications
DOJ: 17/12/2019



Dhananjay Pachankar
Department:
Business Development
DOJ: 11/09/2019



Palak Dave
Department:
Business Development
DOJ: 13/12/2019



Ashish Goel
Department: Accounts
DOJ: 17/10/2019



Rajeev Verma
Department:
Business Development
DOJ: 16/12/2019



Ishu Malik
Department:
Business Development
DOJ: 23/12/2019



Avinash Kumar Srivastava
Department:
Animal Nutrition
DOJ: 02/12/2019



Neha Srivastava
Department: R&D
DOJ: 17/12/2019

Diwali 2019 Celebration

EMPLOYEES ZONE



Christmas 2019 Celebration



EVENTS



**Airtel
Half Marathon
Oct 19, 2019**

**Drinktec 2019
Dec 12-14, 2019**



UPCOMING PROGRAMMES

17th Anniversary Celebration of THE CATALYSTS GROUP



2nd International Conference And Exhibition On Sustainability

Innovation and Diversification
in Sugar and Allied Industry

VASANTDADA SUGAR
INSTITUTE, PUNE,
MAHARASHTRA, INDIA

Jan 31 - Feb 02, 2020





Catalysts

making things happen...

PURSUIT OF EXCELLENCE

Catalysts values are based on belief of collective growth and respect in our internal and external relationships. This value system has facilitated our endeavour to enter into research and scientific collaborations with highly reputed institutes and organizations. We have a well-defined process for developing and launching innovative products based on the collaborative model.

Catalysts continuous striving for quality products and services developed with an innovative mindset has been recognized by various institutions. Our quality journey has been further detailed below:



Catalysts have been certified by ISO 9001:2015 ensuring compliance across multiple criteria including effective Quality Management System, efficient management of our processes and continuous improvement of the system.



Halal Certification Services (HCS) is a world-wide recognized certification providing assessment, auditing, and training services.



It has been established under the Food Safety and Standards Act, 2006 which consolidates various acts & orders that have hitherto handled food related issues. FSSAI has been created for laying down science-based standards for articles of food and to regulate their manufacture, storage, distribution, sale, and Import to ensure availability of safe and wholesome food for human consumption.



Kosher certification is a standalone international quality standard which is increasingly prevalent in the food ingredients and retail sector. Catalysts Biotechnologies Pvt Ltd is certified from KLBD Kosher agency. As Europe's largest kosher agency KLBD is respected and accepted by all parties worldwide Kosher products require kosher certified ingredients. Ingredient buyers specify kosher knowing that their supplier's manufacturing process has been independently audited.



The FSSC 22000 Food Safety Management System provides a framework for effectively managing organization's food safety responsibilities. It is fully recognized by the Global Food Safety Initiative (GFSI) and is based on existing ISO Standards. It demonstrates that the company has a robust Food Safety Management System in place that meets the requirements of customers and consumers.



Research has been the backbone of Catalysts Biotechnologies Pvt. Ltd, since its inception. The research and development division located at 3/1/4, Site IV, Industrial Area, Sahibabad, Ghaziabad is recognized by Department of Scientific and Industrial Research (DSIR), Department of Science & Technology (DST), Ministry of Science & Technology, Govt of India. This recognition has created an enabling environment for development and utilization of new innovations benefit thereof for society and environment.

"We will endeavor to make 'Catalysts' a global brand in the Industrial Biotechnology space. Catalysts would be identified with a work culture of integrity, respect, team work, ownership, trust, learning and happiness for all stakeholders."



Catalysts

making things happen...

ISO 9001:2015 Certified | FSSC 22000 Certified

CORPORATE OFFICE:

240, Functional Industrial Estate, Patparganj,
Delhi - 110092, India

REACH US

Phone: +91 11 49867313 / 49867314

Email: info@thecatalystsgroup.com

Web: www.thecatalystsgroup.com

Catalysts Connect is a Catalysts Group Publication. The view/pictures/articles used or expressed in this Magazine are not necessarily those of the Catalysts Group.

Catalysts Connect Volume 34 © Catalysts Group

