



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 10, Issue 8, August 2021

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

**Impact Factor: 7.569**

9940 572 462

6381 907 438

[ijirset@gmail.com](mailto:ijirset@gmail.com)

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# Solid Waste ‘Bhandara (Pink Gulal)’ Management at Jyotiba Temple, Wadi- Ratnagiri, District Kolhapur (MS)

Pondhe Goraksh .M<sup>1</sup>, Kanade Shubham K<sup>2</sup>

Associate Professor, Department of Environmental Science, P.V.P.College, Pravaranagar (MS) India<sup>1</sup>.

P.G. Student, Department of Environmental Science, P.V.P.College, Pravaranagar (MS) India<sup>2</sup>.

(Affiliated to Savitribai Phule Pune University, Pune (MS), India)

**ABSTRACT:** In present investigation an attempt has been made to manage solid waste (Bhandara i.e. pink gulal) at Jyotiba Temple, Wadi-Ratnagiri, District Kolhapur (MS). Eco-friendly treatment was reused for coloured chalk production. It is seen that, the solid waste collected from Jyotiba temple contains component like pink gulal (88.1%), coconut pieces (3.4%) flowers (6.7%) and 1.8% soil particles. The gulal was reused for production of chalk in laboratory. Study shows that chalk prepared from wasted gulal shows less amount of dust fall after writing on glass board as well as longer life than market chalk when compared.

**KEYWORDS:** attempt, component, gulal, chalk, compared.

## I. INTRODUCTION

Solid waste is unwanted or undesired material thrown away after its use. Hence, Solid-waste management is nothing but the collecting, treating, and disposing of solid material that is discarded because it has served its purpose or is no longer useful. At many places disposal methods of solid waste is very crud like, open pit dumping, just outside the vicinity or on the nearby open places. Rapid economic growth, rise in living standards of community, tourist activity, paying capacity of population; accelerate the generation of solid waste. In India, generation of solid waste ranges from 100 to 500 gram/capita/day (Singahl and Pandey, 2001) and this quantity goes on increasing day by day. Therefore, management of such waste involves huge expenditure and receives scant attention of authority (Bhide and Sudarshan, 1983). It is not only technical issue but also strongly influenced by political, legal, socio-cultural, environment and economic factor as well as available resource (Kum et.al. 2005). Therefore, many times this thrown waste remains unclear for many days. This starts do decompose on same place and disturb the scenic beauty of the place, similarly many times spared the different diseases (Thitame, 2010). Such problem not seams to specific town or city. But, now day’s holly places like Shrdi (Pondhe et.al.2009 and 2009), Shani- Shingnapur (Pondhe et.al. 1998 A and B); Jejuri, Tirupati etc. also facing the same problems. In resect days with the help of different direct and indirect advertisement; Devstan Trust or Temple Committee attracts the devotees from every corners of the world. Many times some lacks of devotees visit these temples, holly places during the monthly or yearly occasion or once in a week on specific days. They pray at holly place and offers number of things in varying quantity like, coconut, flowers, garlands, bookes, milk, oil, Bhandara etc. to idol in the temple as symbol of devotion and reverence. There are several temple located on bank of Ganga River which directly dump the daily offerings in to the river as a waste. This intern causes the River Water Pollution and disturbs its ecosystem. Every year 80, 00,000 tons of temple waste is dumped in different River (SubhojitGoswami, 2018). Hence,with foregoing discussion it was felt that to study the Solid Waste Management at Jyotiba Temple at Wadi-Ratnagiri, near Kolhapur district (MS) India.

## II. STUDYAREA

Wadi-Ratnagiri is a small Village in PanhalaTaluka of Kolhapur District in Maharashtra State. This village is located at latitude16°80'12" N and longitude 74°17'98" E. As per myth, teen sage of couple doesn't have a child (Gunaji, 2010).Hence, they did austerity of god Bradinatha. The god Bradinatha satisfied for their austerity and promised them to be born in the womb of sage and his wife Vimalambuja. Bradinatha appeared before the sage couple after eight year as a child on chaitrashuddhashasthi. They named him as Jyotiba. The name Jyotiba originates from the word Jyot;



means light. Since then, the chief deity here is Jyotiba (form of Kedareshwar), who is said to be the son of a young sage. ShriJyotiba or Kedareshwar is a form of Badrikedar and is one of the 12 Jyotirlinga. Jyotiba founded his kingdom on the mountain where temple is stand today at Wadi-ratnagiri. It believes that the Jyotibba helpedAmbabai in her fight with the demons and he killed a giant named Ratnasur at this place. It is said that at this place, the original temple of Jyotiba (idol of Jyotiba) was first was built in 1730 by Navajisaya also known as Patil NavjiSaseof this village. Hence, this place became a shine. Every year onChaitraPoornima of Hindu calendar, a big fair is held at this place and lacs of devotees gather here. Similarly, thousands of devotees come here on Sunday, as this day is sacred to Jotiba. The devotes pray at this holly place and offers number of things in varying quantity like coconut, flowers, garlands and scatter especially pink gual (Bhandara) to idol in and around the temple as symbol of devotion and reverence.

### III. PROBLEMS OF STUDY AREA

It is believed that pink colour Gual (Bhandara) is favourite for god Jyotiba along with coconut pieces and dates. Hence, during festival, every Sunday, holidays and on some occasions the temple is laden with gual and coconut pieces as it is offered to the deity as symbol of sincerity by devotees. Devotes scatter the gual, pieces of coconut, dates etc. in huge quantities in Jyotiba temple. Generally, one devotee scatters approximately 250 gm of gual along with coconut pieces. Many devotees complete their vow to Jyotiba by throwing 1-2 kgs of gual towards the temple (Photo 1). During festivals 6-7 lakhs of devotees scatters huge amount of gual that may goes up to 15-20 tonnes. This scattered Bhanadra remain in surroundings of temple and in interior part of temple for couple of hours. The total surrounding ambient air becomes pinkish. Surface around and in the temple looks like pink carpet after gual get setteled at floor. When festival get over, the sounding of temple losses its scenic beauty. Here, one could observe that along with gual all material is unwanted or undesired because it has served its purpose.

This gual is not natural however its pink colour is prepared using rhodamine B synthetic. The artificial colours that are used are highly structured polymers and are next to impossible to decompose biologically. When devotees throw/scatters the gual powder in the air it comes down very slowly and looks lovely. However, scientists have noted that this is an indication of high concentrations of PM10 particles – up to almost 40 to 80%. This may causes a pro-inflammatory reaction in the body and can even lead to an oxidative leukocyte burst. (Times of India article by TNN 28 Feb 2018). Apart from irritation on skin, colours can leave eyes itchy, watery, and could even cause conjunctivitis. This gual could also leave abrasions and serious injury to skin upon scratching. It could damage the texture of hair, can impact nails and in severe cases, might cause skin disease and even blindness (India Today article by ANI 26 Feb 2018). Often, mica dust is also added to gual for increased shine. Devotees here with existing heart or lung diseases (including asthma) may experience an increase in symptoms like wheezing and difficulty breathing.

However, solid waste like gual, flowers, garlands, coconut husk and pooja offerings generated at Jyotiba temple is collected by Jyotiba temple Sansthan and processes and treated at plant. But gual is not processed and remain as it is. Therefore, it may affect on water quality of that area and also makes soil infertile and changes soil quality. Hence, with foregoing discussion it is clear that management of this unwanted gual (Solid Waste) is essential to avoid environmental problems like air pollution, solid waste pollution, and human health etc.in future. Therefore, in present investigation an attempt has been made to manage it eco-friendly by using reusing it for chalk production.

### IV. MATERIAL AND METHODS

In present study two kilogram sample of solid waste along with gual was collected manually from two sites near the temple. Of which, one sample (1Kg) was from dustbin of Jyotiba temple sansthan and another one kilogram from surroundings area from the floor of temple. These two samples were mixed together homogeneously and brought to laboratory for segregation.The sample was segregated manually for gual and other component like coconut pieces,flowers etc. Gual was filtered for other micro particles using 1 micron mesh. The segregated components were weighted separately and are presented in Table-1.

a) **Chalk production:** For chalk production, appropriate amount of fine and filtered pink gual from segregated components was mixed well with gypsum i.e. Calcium Sulphate dehydrate (48.78%), calcium carbonate (Limestone-10.56%) and white cement (24.4%) in big bowl which were brought from local market. The water was added in this mixture till it becomes homogeneous paste. The care was taken while adding water that paste will not become too thick or watery. The resulting smooth paste was poured into the chalk moulding tray immediately to avoid wasting of material. The chalk moulding tray was kept for 2-3 days in sunlight to become dry for one piece chalk (Huxley, 1868). The chalk (Photo 1) prepared in this way was tasted and compared with chalk bought from market for its size, weight, water solubility, amount of dust form, mark on board after rubbing, dust fall after rubbing the board, writing life etc. (Table-2).

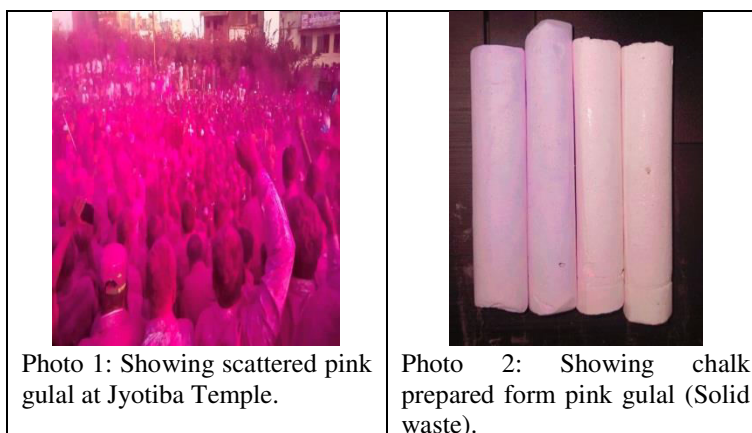


Photo 1: Showing scattered pink gulal at Jyotiba Temple.

Photo 2: Showing chalk prepared from pink gulal (Solid waste).

**Table-1:** Showing segregated different component of solid waste at Jyotiba Temple.

Sr.No	Components	Quantity (gm)	% weight
1.	Coconut pieces	34.00	3.4
2.	Flowers	67.00	6.7
3.	Soil	18.00	1.8
4.	Gulal	881.0	88.1
	<b>Total</b>	<b>1000 gm</b>	<b>100</b>

**Table-2:** Showing comparison of prepared chalk with market chalk for size, weight, water solubility, amount of dust form, mark on board after rubbing, dust fall after rubbing the board, writing life etc.

Sr. No	TEST	White Chalk (Market)	Coloured Chalk (Market)	Gulal Chalk (Prepared)
1	Size: length x Width (inch)	3× 0.39	2.8×0.39	3×0.43
2	Weight (gram)	5.0 - 5.05	4.75 - 4.90	5.80 – 6.1.
3	Water Solubility	Insoluble	Insoluble	Insoluble
4	Amount of Dust form	Less dust form	Less dust form	Less dust form
5	Mark on board after rubbing	No mark on board	No mark on board	No mark on board
6	Dust fall after rubbing the board	Large amount of dust fall	Less amount of dust fall	Less amount of dust fall
7	Writing life	1 and ½ boards	2 boards	2 and ½ boards

## V. RESULT AND DISCUSSION

It is seen from the Table-1 that, the solid waste collected from Jyotiba temple contains component like 88.1% gulal, 3.4% coconut pieces, 6.7% flowers and 1.8% soil particles. This is because the devotees during fair, on Sundays and holidays pray at this holy place and offers number of things (Offerings) in varying quantity like coconut, flowers, garlands and scatter especially pink gulal (Bhandara) to idol in and around the temple as symbol of devotion and reverence. This quantity may vary with occasions.

Table-2 showing comparison of prepared chalk with market chalk for size, weight, water solubility, amount of dust form, mark on board after rubbing, dust fall after rubbing the board, writing life etc. It is seen from table that chalk prepared from wasted gulal shows less amount of dust fall after writing on glass board as well as longer life than market chalk.

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