Stones or items such as small rocks and pebbles are common and can contaminate products during harvest. Stone contaminants are more common in industries where the raw material comes from fields e.g. nuts, vegetables and fruits. When ingredients are harvested from the field, there is a risk that some rocks or stones get picked up as well.

This is why it’s important that the raw material suppliers have proper safety processes in place, helping to minimize the contamination risk at the early phase of the supply and production processes.

However, the final food products should also be inspected in case some of the contaminants slipped through the initial inspection that took place in the suppliers’ facilities, or if there is a contamination risk at the final production and packaging facilities.

When it comes to rock or stone contaminants, it is possible that they are left unnoticed if the products go from field to shelves without going through an X-ray system.

**Sources of Contamination:** Can originate from products harvested from fields such as vegetables, leafy products, rice or other crops. Stones or pebbles can also be transferred to the inside building by employees or along with deliveries if good GMP practices are not followed.

**Effect on consumers:** Choking or broken teeth. In some cases, depending on the severity it may require surgery to remove.

**Controls:**

- Inspect raw materials and food ingredients during receiving and throughout the process.
- Filter/sieving of raw materials where applicable.
- X-Ray machines can be implemented to identify hazards such as stones.
- Optical sorting equipment, gravity separation or fluid bed technology could be implemented if this is feasible. Risk assessment may be required to determine if these sorts of measures would be applicable for the facility.
- Inspection of finished product if possible, to check for any possible contamination.
### Recall of product due to stones or pebbles being found

<table>
<thead>
<tr>
<th>What</th>
<th>When</th>
<th>Why</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publix Jalapeno Bagels</td>
<td>2014</td>
<td>They may have contained small stones</td>
</tr>
<tr>
<td>Sun Med Greek Oregano Flakes</td>
<td>2016</td>
<td>Due to presence of twigs and pebbles</td>
</tr>
<tr>
<td>Houston Pizza and Vern’s Pizza brand pizza sauce</td>
<td>2016</td>
<td>Due to pebbles and twigs</td>
</tr>
<tr>
<td>El Monterey frozen breakfast wraps</td>
<td>2019</td>
<td>Some customers had complained about small rocks in the burritos</td>
</tr>
</tbody>
</table>

### FDA Compliance Policy Guide 555.425 Foods, Adulteration Involving Hard or Sharp Foreign Objects

The FDA Health Hazard Evaluation Board found that foreign objects that are less than 7 mm, maximum dimension, rarely cause trauma or serious injury except in special risk groups such as infants, surgery patients and the elderly.

**Regulatory Action Guidance:** If the product contains a hard or sharp foreign object that measures 7mm to 25mm in length.

### SUMMARY TABLE

<table>
<thead>
<tr>
<th>Sources</th>
<th>Effects</th>
<th>Controls</th>
<th>Published Article</th>
</tr>
</thead>
<tbody>
<tr>
<td>After harvesting from crops</td>
<td>Choking</td>
<td>Visual Inspection</td>
<td>Jkmagnetic.com: How To Remove Stones And Other Impurities From Rice?</td>
</tr>
<tr>
<td>Buildings or Personnel</td>
<td>Broken teeth</td>
<td>X-Ray</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other type of equipment or processes such as fluid bed technology</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### References

1. Physical Hazards | UNL Food. 2019. Physical Hazards | UNL Food. [ONLINE] Available at: [https://food.unl.edu/physical-hazards](https://food.unl.edu/physical-hazards) | [Accessed 17 September 2019]