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Quality of Radiograph – Role of Film Processing

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Abstract

To achieve required Quality Radiograph quality control of Film processing Quality control plays a very vital role. Unfortunately in actual practice this is most neglected by the radiographer, due to the lack of proper knowledge and training.

It is well known fact that the quality of radiograph is affected by radiographic Contrast and Radiographic Definition. The various factors like radiation energy, scattering, film type, geometric unsharpness etc. which affect contrast & definition are generally are taken care of in most of the cases. However invariably film processing is not controlled properly and the resultant radiograph shows poor contrast and poor sensitivity with certain artifacts . The radiographer has a habit of adjusting density of radiograph by adjusting a developer time, which is incorrect. It must be understood that the developer time is inversely proportional to the temperature of developer chemical. The Time-Temperature chart must be followed all the time. Underexposed or overexposed radiograph if processed by varying the developer time by neglecting the standard time-temperature chart will produce a low contrast graininess radiograph with artifacts. For every type of film manufacturer provides a Characteristic curve as well as time-temperature chart. This chart is valid if developer activity is maintained by replenisher. The curve gives us the information about the maximum film contrast achieved at density 2 & density 4. This curve is dependent on processing chemicals & processing conditions. When the radiographer alters the time of development without considering the temperature of developer solution, the shape (gradient) of Characteristic curve is changed and thereby film contrast is reduced. Not only the temperature of dark room is important but also the temperature of processing chemicals. Even though very high quality x-ray film is used for exposure, quality radiograph is not possible unless quality control of processing is taken care of.

Quality control of the processing involves darkroom illumination, time-temperature chart, use of Characteristic curve, agitation, controlling developer activity by replenisher, contamination of developer, fixer activity & washing. Certainly if these factors are taken care of we can produce a quality radiograph.